T-4 0142.PDF

PORT OF PORTLAND

March 23, 2004

Tom Gainer
Senior Environmental Engineer
Cleanup/Portland Harbor
Oregon Department of Environmental Quality
2020 SW Fourth Avenue, Suite 400
Portland, OR 97201

Re: Expedited Remedial Investigation Activities (Revised) – Phase I
Terminal 4 Slip 1 Upland Facility

Dear Tom:

In a letter dated March 8, 2004, the Port of Portland (Port) requested approval from the Oregon Department of Environmental Quality (DEQ) to conduct Phase I of the Terminal 4 Slip 1 Upland Facility Remedial Investigation (RI), prior to DEQ's review and approval of the RI Work Plan that is currently under development by the Port's consultant, URS Corporation (URS). As you recall, the reason for this request is the schedule for the Removal Action project that is currently underway at Terminal 4 under an Administrative Order on Consent (Order) issued by the Environmental Protection Agency (EPA). Under the Order, the Port must identify and implement any necessary Source Control Measures (SCMs) for the Upland Facility prior to the Removal Action, to ensure that sediment recontamination does not occur following completion of the Removal Action. In order to meet this goal and to meet the site characterization data requirements needed to support the design of the Removal Action, the Port needs to conduct Phase I of the RI as soon as possible.

The Port and DEQ met on March 18, 2004 to discuss the original letter. It was determined that the Port would revise the Scope of Work for the Phase I fieldwork, based on the discussion and clarification provided at that meeting. The revised Scope of Work, prepared by URS on behalf of the Port, is attached for your review. Please note that the figure attached to the letter has been revised to reflect DEQ comments in your letter to the Port dated February 18, 2004. As we discussed, the Port and URS would like to be out in the field starting March 29, 2004. Therefore, your rapid review of the letter and approval of the expedited work is greatly appreciated.

Please call me with any questions or comments.

Sincerely,

Kristi Maitland
Environmental Project Manager

Enclosure

c: Dana Bayuk, DEQ
Dennis Klein, Cargill Inc.
Kimberly Thorstad, Cargill Inc.
David Ashton, Port
Phil Ralston, Port
Eric Schwamberger, Port
Anne Summers, Port
Bob Teeter, Port
Mike Edwards, URS

URS

March 23, 2004

Ms. Kristi Maitland
Environmental Project Manager
Port of Portland
121 NW Everett
Portland, Oregon 97209

Subject: Phase I Remedial Investigation Activities, Terminal 4 Slip 1 Upland Facility, Operable Units (OU) 1 and 2

Dear Ms. Maitland:

INTRODUCTION

On behalf of the Port of Portland (Port), URS Corporation (URS) developed a draft Remedial Investigation (RI) Proposal (RIP) for completion of an RI at the Port's Terminal 4 Slip 1 Upland Facility in Portland, Oregon. This RIP was written to comply with the Voluntary Cleanup Program Agreement (VCPA) between the Oregon Department of Environmental Quality (DEQ) and the Port that was executed on December 4, 2003. The RIP was submitted to DEQ on January 23, 2004. DEQ comments on the RIP were received by the Port on February 23, 2004.

As described in the RI Proposal, the Port is planning to conduct the RI in three phases, identified as Phases I through III. Phase I is proposed to be "fast-tracked" in that it would be conducted prior to DEQ approval of the RI Work Plan. Phase II would be executed after DEQ approval of the RI Work Plan. The majority of the RI field activities would be completed as part of Phase II. Phase III would consist of any additional field investigation necessary to address significant data gaps identified after completion of Phases I and II.

This letter describes the revised Scope of Work (SOW) for those activities that are proposed for the Phase I portion of the RI, and supports the Port's request for DEQ approval to proceed with Phase I activities prior to DEQ approval of the RI Work Plan. The Phase I SOW was previously submitted to DEQ on March 8, 2004. URS and Port personnel met with DEQ on March 18, 2004 to discuss the SOW. The revised SOW provided herein addresses verbal comments received from DEQ at the March 18, 2004 meeting.

PURPOSE OF PHASE I

Under an Administrative Order on Consent (Order) issued by the Environmental Protection Agency (EPA), the Port has prepared an Engineering Evaluation and Cost Analysis Work Plan for a Removal Action at Terminal 4. The Removal Action is intended to accelerate cleanup of contaminated sediment adjacent to Terminal 4, including sediments within Slips 1 and 3 and along the river frontage of the T4 Slip 1 Upland Facility covered by the VCPA. Under the Order the Port must identify and implement any necessary Source Control Measures (SCMs) for the Upland Facility prior to the Removal Action, to ensure that sediment recontamination does not occur following completion of the Removal Action. In order to meet this goal and to meet the site characterization data requirements needed to support the design of the Removal Action, the Port is proposing to expedite some of the RI field work.

URS Corporation
111 SW Columbia, Suite 1500
Portland, OR 97201-5850
Tel: 503.222.7200
Fax: 503.222.4292

PHASE I SCOPE OF WORK

Phase I of the RI is designed to provide some initial information regarding the potential for transport of contaminants from Upland Facility Areas of Concern (AOCs), as defined in the RIP, to the river via the groundwater pathway. In addition, information will be collected in order to provide an initial assessment of groundwater gradients at the Upland Facility. Table 1 (attached) describes the proposed field activities for Phase I, including the data objective and specific laboratory analyses to be performed. Figure 1 (attached) provides the locations of the monitoring wells and soil borings described in Table 1. Please note that Figure 1 has been revised to reflect DEQ comments in their letter to the Port dated February 18, 2004. The following text describes, in general, the work to be performed.

To assess the quality of groundwater currently discharging to the river or slips at the Upland Facility, Phase I will include the following:

- The installation of monitoring wells along the margin of the river and slips, at locations downgradient of many AOCs that will be evaluated during the RI. An initial round of groundwater samples will be collected from these wells. Monthly water level monitoring will be performed following the installation of these wells.
- Drilling of soil borings along the margin of the river and slips, at locations downgradient of some AOCs that will be evaluated during the RI. Reconnaissance groundwater samples will be collected from these locations.
- Subsurface soil samples will be collected from certain monitoring well and soil boring locations where appropriate, such as borings completed within the former ore handling AOC, or where contamination is observed during drilling.

Figure 1 depicts the approximate former location of the riverbank prior to filling and development of the Facility. Based on limited site-specific geologic data for the Facility it is generally anticipated that fine-grained native alluvium will be encountered east of the former shoreline; coarse-grained water-bearing units, if any, will be thin and discontinuous within the alluvium. West of the former shoreline it is anticipated that sandy fill soil will be encountered and will be underlain by fine-grained native alluvium; the sandy fill will be the primary water-bearing unit.

Monitoring well construction and depth will be selected based on field observations, including subsurface geology and any evidence of contamination. In general, the monitoring wells will be approximately 20 to 30 feet depth, with a 10-foot-long screened section. The objective of the monitoring well placement will be to construct the well within the first encountered water bearing zone, so that at least 50 percent of the saturated thickness of the water bearing zone will be sampled by the well screen, if possible (i.e. well placement will prioritize screening as much of the saturated zone as possible, rather than prioritizing screening the well across the water table).

Within the native alluvium, a 10-foot-screen will likely accomplish this objective, since it is anticipated that coarse-grained water-bearing zones will be thin. Within the sandy fill, the thickness of the saturated portion of the fill may exceed 20 feet. The well screen will be placed within the approximate middle portion of the saturated portion, rather than across the water table. The screen length may be increased up to 15 feet in length to screen across at least 50 percent of the saturated thickness if the thickness

exceeds 30 feet. However, the screen length will not exceed 15 feet, nor will the screen be placed across the contact between the fill and native alluvium. An Oregon Registered Geologist will direct and oversee all well installation activities.

The wells will be installed by a State of Oregon licensed monitoring well constructor using a truck-mounted, push-probe drilling rig. This method drives a 3.5-inch (O.D.) diameter temporary steel casing with an expendable point to the desired monitoring well depth. The pre-constructed monitoring well is then installed into the temporary casing. The monitoring well construction will consist of a 2-inch diameter, Schedule 40 PVC well casing and screen. The well screen will be 10 to 15 feet in length with a 10-slot pre-packed screen consisting of a stainless steel wire mesh over 20-40 silica sand. The screen interval for each monitoring well is anticipated to be 20 to 30 feet below ground surface (bgs), but may vary depending on conditions observed during drilling. Additional sand will be placed in the annulus between the pre-packed screen and the temporary steel casing to complete the filter pack. The annulus will be filled with sand to an elevation two feet above the top of the screen. The remainder of the annulus will be filled with bentonite to the ground surface to construct the seal. The well completion will consist of a flush-mounted, steel monument.

The monitoring wells will be developed following installation. Development will consist of the removal of at least 10 casing volumes of groundwater using a submersible pump. Specific conductance, pH, turbidity, and temperature will be monitored periodically during development, and development will continue until the discharge water appears reasonably free of sediment, water quality parameters stabilize to within 10 percent of the previous reading, and turbidity ceases to significantly improve with continued development.

One groundwater sample will be collected from each of the new monitoring wells. Prior to sample collection, the monitoring wells will be purged of at least three well casing volumes of groundwater using a peristaltic pump and new, dedicated polyethylene tubing. Prior to purging, and following removal of each well casing volume, specific conductance, pH, turbidity, and temperature will be monitored and recorded on a groundwater sampling data sheet. Purging will continue until the water quality parameters have stabilized to within 10 percent of the previous reading. Groundwater samples will be transferred directly to the sample container using the peristaltic pump and tubing, except for volatile organic compound (VOC) samples, which will be collected last using a new, disposable polyethylene bailer.

Reconnaissance groundwater samples will be collected from the soil borings using a temporary, pre-constructed well screen. Placement of the temporary well screen will follow the procedures describe above for selecting monitoring well screen intervals. Because the temporary screen is only five feet in length, it may not be feasible to temporarily screen greater than 50 percent of the saturated thickness of the first water bearing unit encountered. The temporary wells will be purged and sampled as described above for the monitoring wells.

All groundwater samples (monitoring well and reconnaissance samples) will be analyzed by the analytical methods as indicated on Table 1.

During drilling of each monitoring well boring and soil boring, soil core will be collected continuously as the boring is advanced. Upon retrieval of each core, the polyethylene liner will be removed from the core barrel and cut in half lengthwise to expose the soil core for observation and sample collection. The

soil will be described in accordance with ASTM D2488-84 and record observations on a boring log. Boring logs will include the project name and location, name of the drilling contractor, drilling method, sampling method, soil and groundwater sample depths, description of soil encountered, field screening results, and any observations (odor, staining, etc.) pertinent to identifying soil or groundwater contamination. Well-construction information will also be included on the boring log.

Soil grab samples will be collected at approximately 4-foot intervals and placed in a sealable plastic bag for screening using a photoionization detector (PID). After the soil has been allowed to sit several minutes, the nozzle of the PID will be inserted into the plastic bag to analyze the headspace for organic vapors. The PID reading will be recorded on the boring log. Soil samples will be collected at each boring if PID readings or visual indications provide evidence of possible contamination. Sample depths will be based on PID results and geologic units encountered during drilling. Within areas of former ore handling, or where monitoring wells or borings will be completed within the footprint of an AOC, shallow soil samples (i.e. 0- to 4-foot-depth range) will be collected and analyzed by the analytical methods indicated in Table 1.

RI PLANNING DOCUMENTS

DEQ's comments on the RIP will be addressed in the RI planning documents, which will consist of the RI Work Plan, Sampling and Analysis Plan (SAP) Project Management Plan (PMP), and Health and Safety Plan (HASP). The combined project plans will be submitted to DEQ by April 23, 2004. However, to ensure compatibility with the Removal Action schedule, it is necessary to get into the field as soon as possible. Therefore, the Port is requesting DEQ approval to implement the Phase I activities prior to DEQ's approval of the RI planning documents.

At the Terminal 1 North Upland Facility, the Port recently submitted the final RI Work Plan, SAP, PMP, and HASP and has received DEQ approval of those Project Plans. Although those documents are specific to the Terminal 1 North Facility, it is planned that the Phase I field activities at the Terminal 4 Slip 1 Upland Facility will follow the procedures described in the Terminal 1 North SAP. This includes procedures related to sample collection, handling, and analytical procedures; field logbook; sample collection; sample containers, preservation, and holding times; sample labeling and packaging; chain-of-custody procedures; investigative derived waste management; decontamination procedures; and quality assurance procedures. In addition, a draft HASP for the Terminal 4 Slip 1 Upland Facility has been prepared, following the same approach as was used in the Terminal 1 North Upland Facility HASP. It is proposed that this draft Terminal 4 Slip 1 Upland Facility HASP be utilized for conducting the Phase I field activities. The draft HASP will be submitted with the combined project plans to DEQ on April 23, 2004, however, a copy of the draft Terminal 4 Slip 1 Upland Facility HASP will be provided earlier upon request.

SCHEDULE

The Port and URS are ready to begin preparation for these activities immediately upon approval by DEQ. The Phase I field activities will take about four weeks to complete.

Please contact either one of us at 503-222-7200 is you would like to discuss this matter further.

Sincerely,

URS CORPORATION

Mike Edwards, PE, MBA
Project Manager

David Weatherby, RG
Project Geologist

Attachments:

Table 1 – Summary of Proposed Phase I RI Field Activities
Figure 1 – Proposed Phase I RI Field Activities

Table 1
Summary of Proposed Phase I RI Field Activities

Sample Location	Sampling Objectives	Analyses[1]	
		Soil[2]	Water
Phase I Proposed Monitoring Well Locations			
MW-01s	Groundwater monitoring location downgradient of AOC 27. Provides hydrogeological data and groundwater quality data for groundwater flow into the Willamette River. This well will also serve as a shallow well in a well cluster to support the Removal Action.	PCBs	NWTPH-Gx, NWTPH-Dx, VOCs, PAHs, PCBs
MW-02s	Provides hydrogeological data. May provide information relative to Gatton Slough as a potential groundwater flow pathway. This well will also serve as a shallow well in a well cluster to support the Removal Action.	--	NWTPH-Gx, NWTPH-Dx, VOCs, PAHs
MW-03s	Provides hydrogeological data and may provide information relative to Gatton Slough as a potential groundwater flow pathway. This well will also serve as a shallow well in a well cluster to support the Removal Action.	--	NWTPH-Gx, NWTPH-Dx, VOCs, PAHs, OCPs, OPPs
MW-04s	Provides hydrogeological data. This well will also serve as a shallow well in a well cluster to support the Removal Action.	--	NWTPH-Gx, NWTPH-Dx, VOCs, PAHs
MW-05	Well to be installed at T4 Slip 3 Upland Facility by BBL as part of the T4 Removal Action project.	--	--
MW-06	Well to be installed at T4 Slip 3 Upland Facility by BBL as part of the T4 Removal Action project.	--	--
MW-07	Groundwater monitoring location downgradient of Cargill AOC 9. Provides hydrogeological data and groundwater quality data for groundwater flow into the Willamette River and Slip 1.	--	NWTPH-Gx, NWTPH-Dx, VOCs, PAHs
MW-08	Groundwater monitoring location downgradient of Cargill AOCs 10 and 14. Provides hydrogeological data and groundwater quality data for groundwater flow into Slip 1.	--	NWTPH-Gx, NWTPH-Dx, VOCs, PAHs, OCPs, OPPs
MW-09	Groundwater monitoring location downgradient of AOCs 62, 67, and 75, and upgradient of groundwater seeps in Slip 1 (AOC 61). Provides hydrogeological data and groundwater quality data for groundwater flow into Slip 1. May provide information relative to Gatton Slough as a potential groundwater flow pathway.	--	NWTPH-Gx, NWTPH-Dx, VOCs, PAHs, OCPs, OPPs
MW-10	Groundwater monitoring location downgradient of AOCs 62, 64, 65, 67, and 75, and upgradient of groundwater seeps in Slip 1 (AOC 61). Provides hydrogeological data and groundwater quality data for groundwater flow into Slip 1.	--	NWTPH-Gx, NWTPH-Dx, VOCs, PAHs, OCPs, OPPs
MW-11	Groundwater monitoring location downgradient of AOCs 58, 60, 64, and 65. Provides hydrogeological data and groundwater quality data for groundwater flow into Slip 1.	Metals	NWTPH-Gx, NWTPH-Dx, VOCs, PAHs, Metals, OCPs, OPPs
MW-12	Groundwater monitoring location within AOC 63. Provides hydrogeological data and groundwater quality data for groundwater flow into Slip 1.	Metals	NWTPH-Gx, NWTPH-Dx, VOCs, PAHs, Metals
MW-13	Groundwater monitoring location within AOC 63. Provides hydrogeological data and groundwater quality data for groundwater flow into Slip 1 and the Willamette River.	Metals	NWTPH-Gx, NWTPH-Dx, VOCs, PAHs, Metals
MW-14	Provides hydrogeological data and groundwater quality data for groundwater flow into Wheeler Bay.	--	NWTPH-Gx, NWTPH-Dx, VOCs, PAHs

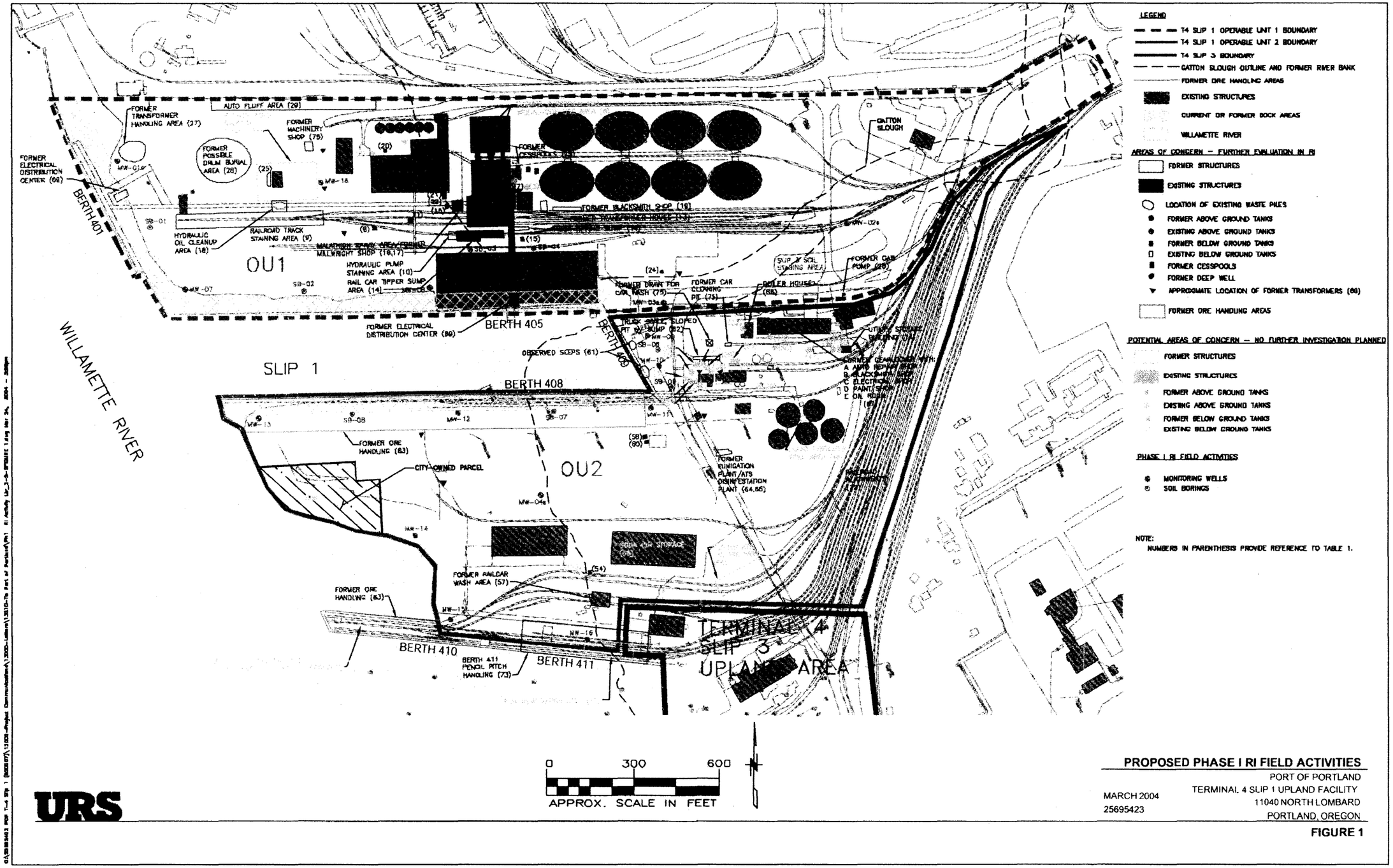
Table 1
Summary of Proposed Phase I RI Field Activities

Sample Location	Sampling Objectives	Analyses[1]	
		Soil[2]	Water
MW-15	Groundwater monitoring location within AOC 63. Provides hydrogeological data and groundwater quality data for groundwater flow into Wheeler Bay and the Slip 3.	Metals	NWTPH-Gx, NWTPH-Dx, VOCs, PAHs, Metals
MW-16	Groundwater monitoring location within AOCs 63, 71, 73, and downgradient of AOC 57. Provides hydrogeological data and groundwater quality data for groundwater flow into Slip 3.	PAHs, PCBs, Metals	NWTPH-Gx, NWTPH-Dx, VOCs, PAHs, PCBs, Metals
MW-17	Provides hydrogeological data and groundwater monitoring location at Cargill AOC 11.	--	NWTPH-Gx, NWTPH-Dx, VOCs, PAHs, OCPs, OPPs, PCB's
MW-18	Provides hydrogeological data.	--	NWTPH-Gx, NWTPH-Dx, VOCs, PAHs, OCPs, OPPs
Phase I Proposed Soil Boring Locations			
SB-01	Reconnaissance groundwater monitoring location downgradient of Cargill AOC 9. Provides reconnaissance groundwater quality data for groundwater flow into the Willamette River.	--	NWTPH-Gx, NWTPH-Dx, VOCs, PAHs
SB-02	Reconnaissance groundwater monitoring location downgradient of Cargill AOC 9. Provides reconnaissance groundwater quality data for groundwater flow into the Willamette River and Slip 1.	--	NWTPH-Gx, NWTPH-Dx, VOCs, PAHs
SB-03	Reconnaissance groundwater monitoring location downgradient of Cargill AOCs 10, 11 and 14. Provides reconnaissance groundwater quality data for groundwater flow into Slip 1.	--	NWTPH-Gx, NWTPH-Dx, VOCs, PAHs, OCPs, OPPs
SB-04	Reconnaissance groundwater monitoring location downgradient of Cargill AOCs 11 and 14. Provides reconnaissance groundwater quality data for groundwater flow into Slip 1.	--	NWTPH-Gx, NWTPH-Dx, VOCs, PAHs, OCPs, OPPs
SB-05	Reconnaissance groundwater monitoring location downgradient of AOCs 62, 67, and 75, and upgradient of groundwater seeps in Slip 1 (AOC 61). Provides reconnaissance groundwater quality data for groundwater flow into Slip 1.	--	NWTPH-Gx, NWTPH-Dx, VOCs, PAHs, OCPs, OPPs
SB-06	Reconnaissance groundwater monitoring location downgradient of AOCs 64 and 65. Provides reconnaissance groundwater quality data for groundwater flow into Slip 1.	--	NWTPH-Gx, NWTPH-Dx, VOCs, PAHs, OCPs, OPPs
SB-07	Reconnaissance groundwater monitoring location within AOC 63. Provides reconnaissance groundwater quality data for groundwater flow into Slip 1.	Metals	NWTPH-Gx, NWTPH-Dx, VOCs, PAHs, Metals
SB-08	Reconnaissance groundwater monitoring location within AOC 63. Provides reconnaissance groundwater quality data for groundwater flow into Slip 1.	Metals	NWTPH-Gx, NWTPH-Dx, VOCs, PAHs, Metals

Notes:

(1) NWTPH-Gx = Northwest Total Petroleum Hydrocarbons - Gasoline Range; NWTPH-Dx = Northwest Total Petroleum Hydrocarbons - Diesel Range; VOCs = Volatile Organic Compounds by EPA Method 8260B; PAHs = Polycyclic Aromatic Hydrocarbons by EPA Method 8270C (SIM); PCBs = Polychlorinated Biphenyls by EPA Method 8082; OCPs = Organochlorine Pesticides by EPA Method 8081A; OPPs = Organophosphorus Pesticides by EPA Method 8141A.

(2) The depth and quantity of soil samples collected will vary depending on visual observation of cores during drilling.



URS

PROPOSED PHASE I RI FIELD ACTIVITIES

PORT OF PORTLAND
TERMINAL 4 SLIP 1 UPLAND FACILITY
11040 NORTH LOMBARD
PORTLAND, OREGON

MARCH 2004
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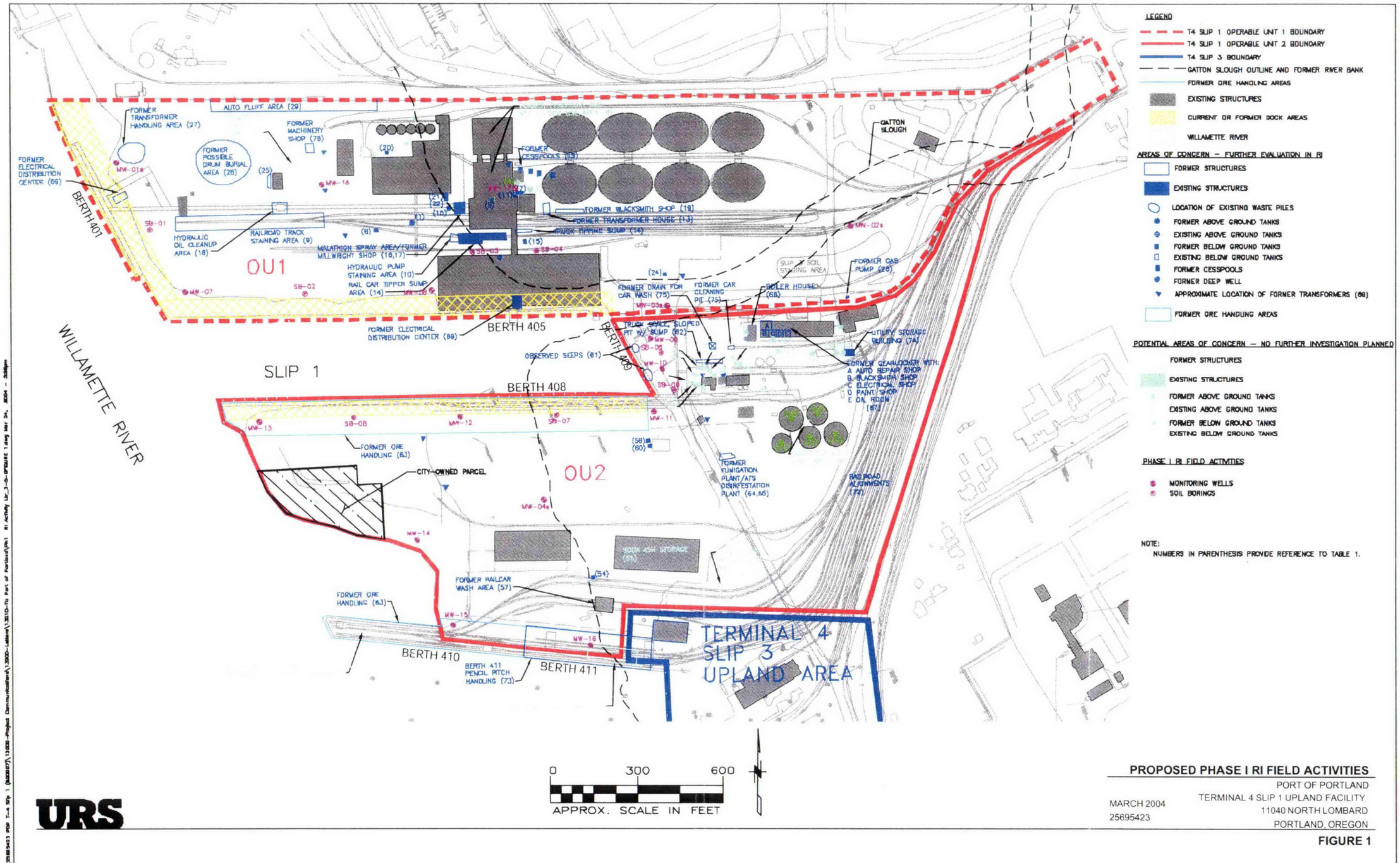
FIGURE 1

CARG001256



URS

PROPOSED PHASE I RI FIELD ACTIVITIES

PORT OF PORTLAND
TERMINAL 4 SLIP 1 UPLAND FACILITY
11040 NORTH LOMBARD
PORTLAND, OREGON

MARCH 2004
25695423

FIGURE 1

CARG001257

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Cargill AgHorizons
P.O. Box 9300/Dept. 1
Minneapolis, MN 55440-9300
15407 McGinty Road West
Wayzata, MN 55391
Phone: 952/742-5622
FAX: 952/742-4088

full report in technical file

March 16, 2004

Mr. Sam Ruda
Port of Portland
121 NW Everett
Portland, OR 97209

RE: Hydraulic Oil Contaminated Soils Cleanup
Portland T-4 Terminal

Dear Mr. Ruda:

Here is the final MACTEC report for the clean up of the hydraulic oil contaminated soil near the hydraulic room at Portland T-4. I have also included a copy of the Soil Recycling Certificate for the soil that was excavated and removed from the site.

I can be reached at 952/742-5622 or dennis_klein@cargill.com if you have any questions.

Thank you.

Yours truly,

CARGILL, INCORPORATED

Dennis Klein

Dennis Klein, P.E.

C: Mr. Gene Loffler

MACTEC

February 26, 2004

Mr. Dennis Klein, P.E.
Cargill, Inc.
15407 McGinty Road West
Wayzata, MN

Re: Cargill Former T-4 Terminal
Portland, OR
Executive Summary w/Attachments
Hydraulic Oil Contaminated Soils Cleanup
November 18 – 19, 2003

Dear Dennis:

Attached is the Executive Summary Report and supporting information (sampling schematic, sample results tabulation, laboratory reports, and TPS registry of materials receipt) for the hydraulic oil contaminated soils cleanup performed by MACTEC on behalf of Cargill on November 18 – 19, 2003. The report should be self explanatory.

Please contact the undersigned if there are any questions concerning this matter. We have greatly appreciated this opportunity to further serve Cargill and yourself.

Sincerely,

MACTEC Engineering and Consulting, Inc.

Kirk E. Sweetland
Vice President

Attachments

P:\530809\Dennis KleinT-4portland-cvrltr-022604.doc KES/dlc

MACTEC Engineering and Consulting
8901 North Industrial Road • Peoria, IL 61615-1509
309-692-4422 • Fax: 309-692-9364

EXECUTIVE SUMMARY REPORT

Cargill Former T-4 Terminal
Portland, OR
Hydraulic Oil Contaminated Soils Cleanup

November 18 – 19, 2003

for

Cargill, Inc.
15407 McGinty Road West
Wayzata, MN

by

MACTEC Engineering and Consulting, Inc.
8901 North Industrial Road
Peoria, IL

February 2004

MACTEC Project No. 530809

EXECUTIVE SUMMARY
CARGILL FORMER T-4 TERMINAL
PORTLAND, OR
HYDRAULIC OIL CONTAMINATED SOILS CLEANUP
NOVEMBER 18-19, 2003

As part of decommissioning activities at its former T-4 terminal in Portland, OR, Cargill encountered stained soils contaminated with hydraulic oil in the area around a storage shed and the C-11 Hydraulic Room. The area also included various terminal building concrete structural footing supports. This area is collectively referred to as the "Area of Concern" or AOC and the extent of contamination was first determined as part of initial cleanup of surficial oils by Cargill earlier in 2002. As a result of the initial partial excavation, Cargill determined that a more rigorous characterization and assessment of the extent of contamination in the AOC was in order.

In October 2002, MACTEC Engineering and Consulting, Inc. performed an investigation to characterize the vertical and horizontal extent of the contamination in the AOC. The results of that assessment revealed the presence of primarily lube oil range (by NWTPH-Dx analytical method) hydrocarbon contamination in soils adjacent to the storage shed and C-11 hydraulic room ranging from the surface to a depth of approximately seven (7) feet vertically and approximately ten (10) feet horizontally from the building structures. Analysis for polynuclear aromatic hydrocarbon (PAHs/ aka PNAs) compounds determined the presence of comparatively low levels of individual PNAs, those present being principally in the surficial soils. The predominance of lube oil range petroleum hydrocarbon compounds and comparative low levels of diesel range compounds determined by the NWTPH-Dx analytical method; combined with the relative absence of PNAs, is consistent with a hydraulic oil source for the contamination detected.

Based upon the assessment findings and guidance from Oregon Department of Environmental Quality (ODEQ) and the site owner, the Port of Portland, MACTEC, on behalf of Cargill, provided the Port with a plan for the cleanup of the oil contaminated soils. As referenced by the Port and DEQ (see Port of Portland letter dated September 18, 2003), the guidance and standards for remediation are those found within the DEQ document: "Risk Based Decision Making for the Remediation of Petroleum Contaminated Sites," dated September, 1999. As further referenced to MACTEC by DEQ and confirmed by telephone conversation by the Port (E Schwenberger: September 12, 2003 to K Sweetland, MACTEC), DEQ's cleanup standards are the USEPA Region 9 Preliminary Remediation Goals (PRGs) for Industrial Soils (Direct Contact Exposure Pathway) for Polynuclear Aromatic Hydrocarbon's (PAHs). MACTEC's remediation plan was based upon the USEPA PRG's including the PRGs associated with Soil Screening Levels (SSLs) for the Migration to Groundwater Pathway (DAF20) cleanup criteria.

In addition to the parameter specific PRG's, DEQ's above referenced guidance (section 4.4, page 36) indicates that soil remaining at the site can not contain, for non-gasoline contaminated soils as present here, contamination exceeding 10,000 ppm TPH. The rigorous initial investigation had previously confirmed that TPH contamination levels in the AOC were already considerably below this criterion.

MACTEC's cleanup plan consisted of the excavation of the contaminated soils in the AOC to the afore-referenced standards and transportation of the removed soils to TPS Technologies, Inc. soil burning facility in Lakewood (Tacoma), WA for destruction. Based upon the extent of contaminated soils present, it was estimated that approximately 52 cu yds (70 tons) of oil contaminated soils would be required to be removed to achieve the cleanup goals.

On November 18 and 19, 2003, MACTEC and its subcontractor, FOSS Environmental Services, mobilized on site and performed the required contaminated soils excavation. Excavation was performed to the extent of the profiles established by MACTEC's October 2002 assessment, using visual and olfactory methods to further verify removal of oil contaminated soils. The extent of excavation is represented in Figure 1.

During the excavation, it was determined that some contamination had followed the trench excavated for an electrical conduit on the west side of the excavation near the southwest corner of building C-11 and extending to a concrete footing pad located approximately 12 feet from the building. Excavation was performed vertically to the bottom of the trench line at depths to 9 feet below grade, and horizontally to the concrete footing. The contamination did appear to go below the footing on the east side, but appeared to be absent on the south side where the conduit continued on. Soils excavation could not address contamination below the footing due to safety considerations (under-mining of the footing). No groundwater was encountered during the excavation activities.

Post excavation sample EF-9.1 was obtained in the area of the trench that could not be evacuated due to the footing and that appeared to have some visible oil contamination. Sample EF-9.2 was sampled in the trench line from an area that had been fully excavated and appeared clean. As noted in the Table I, Post Excavation Sampling/Site Cleanup result table, there was little difference in the analytical results from both samples. Sample EF-9.1 contained only low residual concentrations of phenanthrene (0.019 mg/kg versus no PRG or SSL standard) and pyrene (0.15 mg/kg versus a 4,200 mg/kg SSL). All other compounds in Samples EF-9.1 and EF-9.2 were below laboratory reporting limits.

Including EF-9.1 and EF-9.2, thirteen post excavations samples were obtained from the bottom of the excavation throughout the AOC (refer to Figure I). As noted, the results of sample analyses indicate all post excavation samples were below the USEPA Region 9 PRGs and SSLs, with most constituents below the laboratory reporting limits. The analytical results from the composite sample of the excavated soils contained in the transport containers were also below the PRG/SSL cleanup objectives. Additionally, post excavation samples for polychlorinated bi-phenols (PCBs) collected in the electrical conduit trench were below the laboratory detection limits for PCBs.

A total of 66.23 tons (approximately 51 cu yds) of soil was excavated from the AOC on November 18 and November 19, 2003. Along with 21.88 tons of material excavated in 2002 from the AOC, a total of 88.11 tons (approximately 68 cu yds) of soil were removed, transported, and reported as received at the TPS facility (a copy of the "Customer Job Report" from TPS is enclosed). On January 2, 2004 TPS reported that destruction of those materials was complete (a certificate of destruction will be provided when received).

The results of the post excavation sampling combined with the visual and olfactory techniques used in the field indicate that cleanup to the referenced cleanup criteria-USEPA Region 9 PRG Industrial Standards and Soil Screening Levels, was successfully achieved. And all soils observed as impacted by visual means that could be safely removed, were removed.

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Scott, Jacki /mtkl

From: Thorstad, Kimberly K. /mtkl
Sent: Thursday, January 22, 2004 12:06 PM
To: 'Gene_Loffler@CLDPacific.com'; Klein, Dennis /mtka
Cc: Quayle, Mark T. /mtkl
Subject: FW: Port of Portland Cargill OU Issues - Table 1 (OU1 Only) t4s1\car gill\corgill cor

Table 1 (OU1 Only) 012204.doc

Here is the latest from the Port. I already have a call in to David to ask when he wants to hold a call. Looks like we get 24 hours to review this and yell and if we see any major problems. Let me know what you think and I will send along a note when I hear from David.
Kim
-----Original Message-----
From: ashtod@portptld.com [mailto:ashtod@portptld.com]
Sent: Thursday, January 22, 2004 11:37 AM
To: Thorstad, Kimberly K. /mtkl
Cc: benavp@portptld.com
Subject: Port of Portland Cargill OU Issues - Table 1 (OU1 Only) t4s1\car gill\corgill cor

<<Table 1 (OU1 Only) 012204.doc>>

Kim,

I did not hear from you regarding getting together on issues relating to the development of the Port's Remedial Investigation Proposal as it relates to the Cargill leasehold area. Neither have I received documents responsive to our requests for further information to evaluate certain site conditions. We got an extension of the deadline for the submittal of the RIP until Friday January 23, 2004. We intend to propose the attached to DEQ in relation to the Cargill features that may be areas of releases or threatened releases. If you have any comments or useful explanatory information please send it to us. The RIP will be subject to revision through noon local time on Friday. We will send you a complete copy of the RIP once produced.

We need to talk. Give me a call at your convenience.

Thanks,

David

David Ashton
Port of Portland
Work Tel: 503-944-7090
Work Cell: 503-312-7635
Fax to PC: 503-548-5741
Fax: 503-944-7038
Work Email: ashtod@portptld.com
Work Web: portofportland.com
Home Tel: 503-670-7331

Table 1 (OU1 Only)
Potential Areas of Concern – Port of Portland – Terminal 4, Slip 1 Uplands
(AOL evaluation in progress – table preliminary and subject to change)

AOC Number	AOC Type	Location	Description	Open Area of Concern?
1	AST	• OU1 (former Cargill Leasehold)	• Cargill Tank #45: 675-gallon, steel, diesel. Removed 9/03. • Locomotive and other small equipment fueling. • Litter found on ground near tank.	No, in accordance with ATC ESA Report
2	AST	• OU1 (former Cargill Leasehold)	• Cargill Tank #46: 500-gallon, steel, propane, active.	No, in accordance with ATC ESA Report
3	AST	• OU1 (former Cargill Leasehold)	• Cargill Tank #47: 675-gallon, steel, used oil. Removed 9/03.	No, in accordance with ATC ESA Report
4	AST	• OU1 (former Cargill Leasehold)	• Cargill Tank #48: 250-gallon, steel, used oil. Removed 9/03.	No, in accordance with ATC ESA Report
5	UST	• OU1 (Former Cargill Leasehold)	• Cargill Tank #22: 500-gallon, 'Heater' Fuel Oil, DEQ file # 401. • Tank was located inside the Grain Storage Building in an area with limited access. Surface is paved.	No, in accordance with ATC ESA Report
6	UST	• OU1 (Former Cargill Leasehold)	• Cargill Tank #23: 1,000-gallon, Diesel, DEQ file # 401. Reportedly removed.	Yes, in accordance with ATC ESA Report
7	UST	• OU1 (Former Cargill Leasehold)	• Cargill Tank #85: (may be same as #22, converted storage material) Used Oil, removed in 1993, DEQ file # 401.	No, in accordance with ATC ESA Report
8	Cargill Phostoxin and Weevil-Cide Use	• OU1, Buildings 150 and 151 (Former Cargill Leasehold)	• Phostoxin (containing aluminum phosphide and ammonium carbamate) and Weevil-Cides (containing carbon tetrachloride and carbon disulphide) are hazardous substances. • Weevil-Cide used until mid 1980's. • Dust control measures in place, little to no pesticides reportedly escaped building structure.	No, in accordance with ATC ESA Report

Note: Instances identified as "No, in accordance with ATC ESA Report" refer to instances in which the report specifically discounted a concern as a REC, as well as instances in which a concern was not identifies as a REC by omission.

Table 1 (OU1 Only)
Potential Areas of Concern – Port of Portland – Terminal 4, Slip 1 Uplands

(AOL evaluation in progress – table preliminary and subject to change)

AOC Number	AOC Type	Location	Description	Open Area of Concern?
9	Railroad Track Staining	• OU1, (Former Cargill Leasehold)	• Tracks between Berth 401 and the Track Shed. • Track staining was identified by URS and ATC during the Facility reconnaissance.	Yes, in accordance with ATC ESA Report
10	Cargill Hydraulic Pump Area Staining	• OU1, (Former Cargill Leasehold) west of the Car Tipper shed	• Staining around the two hydraulic pump units was identified by URS and ATC during the Facility reconnaissance.	Yes, in accordance with ATC ESA Report
11	Cargill Deep Water Well	• OU1, (Former Cargill Leasehold) west of the grain storage tanks	• 1953 drawing show the well supplied water to the Dust House. • Well was filled in 1992 with cement according to Oregon Water Well Report dated 4/27/92. • Field notes indicate approximately 7 feet of oil seen on top of water, beginning at 27 feet below ground surface. • Spencer Environmental pumped 307 gallons of "product" from the well, and PCB tests were negative.	Yes, in accordance with ATC ESA Report
12	General Pesticide Usage	• OU1 (Former Cargill Leasehold)	• Pesticides used in Cargill facility. Quantities, types, and storage areas not known.	No, in accordance with ATC ESA Report
13	Former Transformer House	• OU1, (Cargill Leasehold) Southwest of Grain Storage Area	• Built ~1918, had below-ground transformer storage. • Demolished in 1977. • Transformer type not known.	Yes
14	Cargill Basement-Level Sumps	• OU1, (Cargill Leasehold) Cargill Rail Car Tipper Sump	• Cargill Rail Car Tipper Sump contained "discolored and odorous" liquid (likely groundwater) observed during Facility walk.	Yes
15	Cesspools	• OU1, (Cargill Leasehold) several locations	• 4 cesspools identified on maps west of the grain storage silos were labeled as demolished. • 2 cesspools (south of the Cargill Truck Dump and west of the former Millwright Shop) were noted on undated Cargill blueprints.	Yes

Note: Instances identified as "No, in accordance with ATC ESA Report" refer to instances in which the report specifically discounted a concern as a REC, as well as instances in which a concern was not identifies as a REC by omission.

Table 1 (OU1 Only)
Potential Areas of Concern – Port of Portland – Terminal 4, Slip 1 Uplands
(AOL evaluation in progress – table preliminary and subject to change)

AOC Number	AOC Type	Location	Description	Open Area of Concern?
16	Cargill Malathion Mixing Area	• OU1, (Cargill Leasehold) west of Cargill Grain Facility Building	• Room used for bulk Malathion storage (in drums) and mixing the malathion with grain prior to shipment. • Application ceased in 1997. • One HAZMAT response recorded for worker exposure resulting in illness. • Odor observed by ATC and URS during Facility reconnaissance.	Yes
17	Cargill Millwright Shop/ Compressor House	• OU1, (Cargill Leasehold) west of Flour Mill	• 1961 Historic maps show UST, compressor and sump, and possible UST *(no confirmation on 500-gallon heating oil UST in other documents).* • Need more information on chemical handling.	Yes
18	Cargill Hydraulic Oil Releases	• OU1, (Cargill Leasehold) Pump house near Cargill Truck Inspection Canopy • Caragill C-11 location	• Remediation initiated at C-11 location but not complete. Excavations exposed during June 2003 Facility walk. 11/2003 excavation left contaminated soil on-site due to inaccessibility. • Regulatory status of release not known. • No additional information on C-11 release is available.	Yes
19	Former Industrial Activity Buildings	• OU1, (Cargill Leasehold) Former Blacksmith Shop and Former Machinery Shop	• No record of practices associated with these buildings.	No, in accordance with ATC ESA Report
20	UST	• OU1 (Cereal Foods Leasehold)	• Cereal Foods Tank #19: 10,000-gallon, Fuel Oil #5. DEQ file # 447.	No, tank reportedly decommissioned properly
21	UST	• OU1 (Cereal Foods Leasehold)	• Cereal Foods Tank #20: 1,000-gallon, Diesel, removed in approximately 1989, DEQ file # 447.	No, tank reportedly decommissioned properly
22	UST	• OU1 (Cereal Foods Leasehold)	• Cereal Foods Tank #21: 1,000-gallon, Fuel Oil #2, DEQ field # 447.	No, tank reportedly decommissioned properly

Note: Instances identified as "No, in accordance with ATC ESA Report" refer to instances in which the report specifically discounted a concern as a REC, as well as instances in which a concern was not identifies as a REC by omission.

Table 1 (OU1 Only)
Potential Areas of Concern – Port of Portland – Terminal 4, Slip 1 Uplands

(AOL evaluation in progress – table preliminary and subject to change)

AOC Number	AOC Type	Location	Description	Open Area of Concern?
23	Cold Storage Plant	• OU1, Former Warehouse #8	• Built in 1923, 100x200ft. Held apples. • The cooling equipment was housed at the western end of the building according to Port photos. • Reported cooling fluid was "brine".	No
24	UST	• OU1	• Oil-storage UST shown in one 1965 historical drawing, adjacent to former cafeteria.	No
25	Waste Pile	• OU1, 1 pile observed in western portion of Facility	• Pile contains tires, scrap metal, railroad ties, other debris. • Period of use, historical disposal practice unknown.	No
26	Gas Fueling Pump	• OU1, Along southern boundary of Carroll Road	• Very little information regarding period of use, gas tank location, fueling practices.	No
27	Former PCB Materials Containment Area	• OU1, western boundary	• Former PCB material handling area. • Interviews indicate staining of soils in the vicinity of a PCB-containing equipment load/unload ramp.	Yes
28	Possible Drum Burial Area	• OU1, western portion of Facility	• An area west of the Cargill office is purported to formerly contain buried drums. • Geophysical testing was performed and no drums or buried metal objects were located.	No
29	Auto Fluff Area	• OU1, Northern property boundary	• Auto demolition occurring at Schnitzer Steel results in dust and airborne particulate dispersion on OU1 property.	Yes

Note: Instances identified as "No, in accordance with ATC ESA Report" refer to instances in which the report specifically discounted a concern as a REC, as well as instances in which a concern was not identifies as a REC by omission.

T-4 0149.PDF

Cargill

October 6, 2005

David Ashton
Attorney
Port of Portland
PO Box 3529
Portland, OR 97208

RE: Cargill Leasehold
Port of Portland, Terminal 4, Operable Unit 1
Response to May 13, 2005 Lease Notice and Demand for Reimbursement
Cargill File No. L38009-0504

Dear Mr. Ashton:

This letter is in response to the Port of Portland's letter dated May 13, 2005 and requesting information related to the Unresolved Environmental Matters (Items 2, 4, 6, 7 and 8) that the Port and Cargill reached agreement on in a countersigned letter dated December 29, 2003. Cargill has recently performed a file review of the above referenced matter and provides the following information in an effort to close out these items and resolve this matter.

As Cargill has reiterated in our correspondence with the Port (including letters dated November 20, 2003, December 19, 2003, December 22, 2003 and December 29, 2003) it is our full intention to comply with our Lease obligations including any valid remediation and indemnification obligations. It is our belief that Cargill has provided assistance and information to the Port when reasonably able, and we now seek the Port's assistance in resolving the Unresolved Environmental Matters of our Lease termination. In an attempt toward satisfaction of Cargill's outstanding Lease obligations, we would like to narrow the five Unresolved Environmental Matters to those issues that remain unresolved between us. The original five Matters are repeated below in italics followed by Cargill's understanding of the status as of the date of this letter.

Item 2 from December 29, 2003 Letter: ***Through a series of communications and letters to Cargill (including letters dated May 23, 2003; June 20, 2003; November 14, 2003;November 20, 2003, November 24, 2003; and December 24, 2003), the Port has identified its requirements regarding Cargill's implementation of its Lease Section 12.14 exit audit and remediation responsibilities, including (i) requesting that Cargill address DEQ's environmental concerns relating to the Premises and that Cargill incorporate those concerns in its exit audit; and (ii) notifying Cargill that to the extent DEQ required the Port to investigate and cleanup contamination that was covered under Cargill's Lease obligations, the Port would hold Cargill responsible and seek recovery and reimbursement.***

Delivery Address:
15407 McGinty Road West
Wayzata, MN 55391-2398

Mail Address:
PO Box 5724
Minneapolis, MN 55440-5724

Cargill's Response to Item #2 from the December 29, 2003 Letter:

Through a series of communications and letters to the Port (including letters dated November 20, 2003, December 19, 2003, December 22, 2003 and December 29, 2003), Cargill has reiterated its understanding that obligations under the Port's Voluntary Cleanup Program Agreement with the DEQ are not binding on Cargill because Cargill is not, and never has been a party to this agreement. Cargill does recognize its indemnity obligations under Section 6.4 of its Lease Agreement with the Port, and its obligations to address Recognized Environmental Conditions documented in the December 4, 2003 Environmental Site Assessment completed by ATC under Section 12.14 of its Lease Agreement with the Port. Despite the expressed mutual desire to cooperate, this appears to remain an Unresolved Environmental Matter related to interpretation of the Lease language and the Port's repeated attempts to make Cargill a party to the Port's Voluntary Cleanup Program Agreement with the DEQ.

Item 4 from December 29, 2003 Letter: On November 20, 2003, the Port notified Cargill under the Lease of Cargill's failure to comply with the Lease regarding DEQ's environmental concerns with respect to the Premises. Cargill's response is dated December 22, 2003.

Cargill's Response to Item #4 from the December 29, 2003 Letter:

Cargill responded to the Port in its December 22, 2003 letter from Kimberly Thorstad that Cargill has full intent to fulfill its remaining Lease obligations however is not willing to automatically expand its Lease obligations to include obligations imposed on the Port by the DEQ under the DEQ's Voluntary Agreement with the Port. As stated in the Port's May 13, 2005 letter to Cargill, the Lease requires Cargill to "remedy any contamination for which it is responsible". We have informed the Port numerous times that we are ready and willing to remedy any remaining contamination identified by ATC as related to Cargill's operations at the Leasehold and also any contamination outside of the scope of the ATC report which the Port can affirmatively prove was a result of Cargill's occupation of the Leasehold. To date no such information has been forthcoming. Cargill would like to proceed with the remedy of any remaining contamination identified by ATC as Cargill's responsibility, however, we are cooperating with the Ports request to delay this action until further notice.

Item 6 from the December 29, 2003 Letter: On December 4, 2003, the Port received the Environmental Site Assessment of the Premises prepared by ATC Associates, Inc. dated December 4, 2003 ("Audit Report"). The Port responded with additional matters which it believes are required for compliance with Lease Section12.14 by letter dated December 17, 2003. Cargill's detailed response supplementing its preliminary response letter of December 22, 2003, has not yet been received by the Port.

Cargill's Response to Item #6 from the December 29, 2003 Letter:

Cargill agreed to supplement its initial, December 22, 2003 response to the Port's December 17, 2003 letter, with additional information that could reasonably be obtained. In order to expedite the transfer of information, Cargill did provide additional supplemental information to the Port either verbally, via e-mail or by fax transmission as it became available. We believe this Unresolved Environmental Matter has previously been satisfied, however, we have attached a letter to Kristi Maitland dated October 6, 2005 including a summary of the supplemental information previously provided trusting that this Unresolved Environmental Matter is now officially resolved.

Item 7 from the December 29, 2003 Letter: On December 15, 2003, the Port notified Cargill of non-compliance with the Lease with respect to the 1992 cleanup and closure of a water well as described in the Audit Report. Cargill's response is pending.

Cargill's Response to Item #7 from the December 29, 2003 Letter:

Cargill and/or ATC have previously provided information to the Port related to the 1992 water well closure and analysis both verbally and via fax transmission or e-mail. It is our understanding that in 1992 the Port was notified of the water well closure work and that on-site Port personnel signed off on the water well closure inspection form during the process. The oil water mixture pumped from the well prior to closure was held on site until analytical tests confirmed the mixture as non-detectable for PCB's; and subsequently the mixture was disposed of accordingly. It is our understanding that ATC located the original analytical results of the mixture and previously provided them to the Port. We trust this fully addresses previously Unresolved Environmental Matter 7, related to the Port's December 15th Letter concerning the 1992 Water Well Closure Report.

Item 8 from the December 29, 2003 Letter: On December 24, 2003, the Port requested additional environmental information from Cargill regarding its activities on the Leasehold and notified Cargill of an apparent failure relating to the regulatory status of the facility's stormwater management system.

Cargill's Response to Item #8 from the December 29, 2003 Letter:

It is our understanding that the Stormwater Management System serving the Leasehold is owned, permitted and maintained by the Port. We have no additional information or records related to the Leasehold's Stormwater Management system. Cargill's activities at the Leasehold were related to its business and to our knowledge did not include any unlawful or undisclosed releases or activities that would have impacted the Leasehold's Stormwater Management System. Cargill did perform routine preventative maintenance on its equipment and performed regular housekeeping inspections (see the attached example inspection form labeled Exhibit "A") in efforts to minimize any adverse impacts on the Leasehold and to facilitate immediate correction

of any noted problems. We trust this fully addresses Unresolved Environmental Matter 8, related to Cargill sight activities and the regulatory status of the Leasehold's Storm Water Management System.

It is Cargill's belief that this response, taken together with the submittal of the December 4, 2003 Audit Report prepared by the Port approved consultant, ATC, and Cargill's previous responses dated December 22, 2003 and December 29, 2003, fully address Unresolved Environmental Matters 6, 7 and 8.

Cargill wishes to continue to work with the Port to completely resolve Unresolved Environmental Matters 2 and 4 and complete valid remediation and indemnification obligations submitted under the terms of the July 1, 1975 Lease and its Amendments.

As to the allegations by the former Longshoreman related to operations at the former Cargill Leasehold, in cooperation with the Port's May 13, 2005 request to Cargill, we provided our written response to you in our letter dated June 3, 2005. We will continue to cooperate and provide reasonably obtainable information to support the Port's efforts to fulfill its obligations to the DEQ under their Voluntary Cleanup Program Agreement, but we would like to resolve the lease issues first.

Cargill wishes to reiterate our willingness to remedy any remaining contamination identified by ATC as related to Cargill's operations at the Leasehold and also any contamination outside of the scope of the ATC report that the Port can affirmatively prove was a result of Cargill's occupation of the Leasehold.

We welcome your comments or suggestions in efforts to move forward to resolve the outstanding lease environmental issues. With that resolved, Cargill will then be able to devote additional attention to the Port's requests related to the Voluntary Cleanup Program with DEQ. Please feel free to call me if you wish to have further discussions on the lease issues.

Sincerely,

Kimberly K Thorstad

Kimberly Thorstad
Attorney

cc: ✓ Linda Childers, Cargill
Dennis Klein, Cargill
Gene Loffler, CLD
Arnie Schaufler, CLD
Kristi Maitland, Port

LAW #722619

Tanking, Donna

From: Klein, Dennis /Dennis_Klein@cargill.com
Sent: Tuesday, May 31, 2005 2:10 PM
To: Thorstad, Kimberly K.
Cc: Childers, Linda C.; Klein, Dennis
Subject: Conversation recap...

...is attached.

Port research.doc
(22 KB)

	Gene Loffler	Greg Rowe	Doug Dunlay
1. 1500-gallon malathion tank	No tank on site. Malathion was mixed in a mixing room and was stored in, and used from, 55 gallon drums	Does not recall tank	No recollection of a tank
2. Excess malathion off the belts and streams flowed out…	No knowledge	No memory	No knowledge
3. & 5. Stormwater used to dump… catch basins AOC 3 & 5	No knowledge	No knowledge	No knowledge
4. Significant hydraulic oil leak	No knowledge	No memory	No knowledge
6. & 7. Dump sites, including creosote waste	No knowledge	No knowledge	Remembers used railroad ties stored in area 6, *possibly* in area 7, but definitely no handling, storing, or disposing of creosote products
Carbon tetrachloride usage (banned in mid-80s, so these gents would have no knowledge of it)	No knowledge	No knowledge	No knowledge
Aluminum Phosphide use	Remembers normal usage only.	Remembers normal usage only.	Remembers normal usage only.

LAW #1144760

Oregon
Theodore Kulongoski, Governor

Department of Environmental Quality
Northwest Region Portland Office
2020 SW 4th Avenue, Suite 400
Portland, OR 97201-4987
(503) 229-5263
FAX (503) 229-6945
TTY (503) 229-5471

August 25, 2006

Ms. Nicole Anderson
Port of Portland
P.O. Box 3529
Portland, OR 97208

RE: Draft Remedial Investigation Report and Storm Water Evaluation
Terminal 4 Slip 1
ECSI #2365

Dear Ms. Anderson:

The Department of Environmental Quality (DEQ) reviewed the March 2006 *Draft Remedial Investigation (RI) Report* for the Port of Portland (Port) Terminal 4 Slip 1 (T4S1) site and the June 2006 *Draft Storm Water Evaluation* for the Terminal 4 Slip 1 and Slip 3 sites and has the following comments.

Draft RI (Slip 1)

General Comments

1. DEQ agrees that significant sources of groundwater contamination were not found at the site. However, the Port's conclusion that there are no groundwater plumes appears to be based on data from groundwater monitoring wells only, and should also include data from reconnaissance samples.

2. The DEQ's *Joint Source Control Strategy* (JSCS) requires that probable effect concentrations (PECs) be used to screen analytical results for erodible soil (less than 1-foot below ground surface [bgs]) situated within 100 feet of a catch basin and/or the top of the river bank, or on the riverbank. DEQ understands that given the approach being used to assess facility storm water, the Port disagrees with the applicability of these screening criteria for soil in the vicinity of storm water catch basins. However, to date DEQ has not approved the Port's storm water sampling and data evaluation methodology. In addition, for chemicals considered to be persistent bioaccumulative toxins, erodible soil and catch basin data should be compared to DEQ's 2001 bioaccumulative sediment screening level values. For your information, DEQ has recently required PCB and phthalate analyses for all storm water sediment evaluations performed at sites in the Portland Harbor.

3. The Draft RI Report does not include a Conceptual Site Hydrogeologic Model (CSHM) for T4S1. In addition, descriptions of the facility geology and hydrogeology (i.e., sections 5.1.2

and 5.1.3) do not reflect agreements reached regarding the site stratigraphy and hydrostratigraphy included in the Engineering Evaluation and Cost Analysis dated May 31, 2005 (EECA). The Draft RI Report should be revised to: 1) include a CSHM emphasizing the Fill Unit and upper Alluvial Unit, and 2) incorporate information from Appendix D of the EECA as appropriate to support the objectives of the T4S1 RI.

Specific Comments

Section 1.1. The second paragraph references the City of Portland (the City) municipal storm water line that crosses the site. The City's storm water line should be shown on a figure for DEQ's information and completeness.

Section 2.1.1. The second paragraph should be revised to include descriptions of the land-use east of the site. The report currently indicates the east side of the site is bounded by the property line.

Section 2.4. Area of Concern (AOC) 12 is missing from the nested table at the end of this section of the Draft RI Report. The table should be revised accordingly and other tables and figures that reference AOCs should be checked for accuracy.

Section 3.2. The Beneficial Water Use Determination (BWUD) should provide information regarding the reasonably likely current and future uses of water at the site, including, but not limited to, suitability for beneficial uses, contribution to the maintenance of aquatic or terrestrial habitat, and beneficial uses recognized by the Water Resources Department or other governmental agencies (e.g., water rights). A complete list of the information items that should be considered in preparing a BWUD is provided in OAR 340-122-0080(3)(F). Sections 3.2.1 and 3.2.2 of the report should be revised accordingly.

Section 3.2.1. Discussions of groundwater beneficial use focuses on the numbers and locations water supply wells in the vicinity of the facility, implying that extraction by wells is the only beneficial use for groundwater at the site. DEQ considers, at a minimum, recharge of the Willamette River to be another site-specific beneficial use of groundwater. The report should be revised accordingly.

Section 4.1.3. The screening of groundwater for human health is based only on AWQC for fish consumption, but not on consumption of surface water as drinking water. The drinking water pathway is being evaluated for the Portland Harbor site, and is included in the Portland Harbor Joint Source Control Strategy document.

"Default background" metals concentrations are shown in selected figures (e.g., Figures 16 and 18) along with the screening criteria mentioned here. It appears soil metals analytical results are being compared to background values. If this is the case this section of the Draft RI Report should reference use of these values.

Section 4.3. The Draft RI Report should note and discuss any deviations and modifications to field procedures and/or the scope of work approved in work plans if appropriate. Alternatively the report should clearly state that work was completed consistent with those work plans.

Section 5.1.3.1. Based on the work completed during the RI DEQ concurs with the Port's conclusion that, "...Gatton Slough is not expected to act as a preferential flow pathway for groundwater." The Port also indicates that no preferential pathways were identified based on the geologic observations made during the RI. DEQ disagrees with this assertion. As noted in the Draft RI Report, DEQ has previously indicated that in addition to Gatton Slough, sand-filled channel(s) and/or storm water conveyance piping could act as preferential pathways at T4S1. DEQ identified evaluation of these potential pathways as an information need for the RI. In a letter dated August 2, 2004, the Port committed to performing additional work to assess potential pathways if groundwater impacts were identified.

Regarding the sand-filled channel (see Figure 4 of the RI work plan dated August 20, 2004), DEQ understands that:

- Groundwater impacts have been identified (e.g., AOC 15 [Abandoned Cesspools]).
- The Port did not include the feature in the geologic cross-sections provided in the Draft RI Report, apparently due to uncertainty related to the locations of the borings where it was observed.
- It does not appear that the Port conducted additional investigatory work to independently assess the feature. Except for the monitoring well clusters constructed to support the EECA, which were not located on the feature, exploratory borings and monitoring wells completed during the RI did not extend deeper than 30 feet bgs (i.e., the approximate depth of the top of the sand-filled channel). In other words, no borings were drilled deep enough to assess the presence, orientation, and depth of this geologic feature.

The Draft RI Report also concludes that buried storm water piping and utilities "...were not evaluated further as preferential pathways based on the absence of plumes of impacted groundwater..." However, the Port's conclusion is not supported or discussed further.

DEQ concludes from the Draft RI Report that further evaluations of the sand-filled channel and selected sections of storm water piping are warranted. Additional evaluation should include:

- The presence, orientation, and depth of the sand channel and potential groundwater impacts, such as from AOC 15, associated with the feature; and
- Providing information for buried storm water piping and utilities including, but not limited to, depths of construction and backfill material types. As-built information should be considered in the context of RI data collected in OU1 (e.g., depth to groundwater).

This information will be used to confirm the Port's conclusions and address DEQ's concerns regarding potential preferential pathways for groundwater flow.

Section 5.2. Analytical data is compared to and discussed in terms of the screening criteria identified in Section 4.1.3. Many of the screening criteria are less than the laboratory method reporting limits (MRLs) shown in the data tables. The report should discuss how this data was used for purposes of developing interpretations of the nature and extent of potential soil and groundwater impacts.

Section 5.2.1.1. The Draft RI Report indicates that polycyclic aromatic hydrocarbons (PAHs) exceeded industrial soil PRGs in OU1 at several locations including between 13 feet and 17 feet bgs at AOC 15 (i.e., soil borings 22 and 23), and in shallow soil between a series of storm water catch basins (i.e., soil samples S-7, S-12, and S-13).

The DEQ's general comment regarding PECs is applicable to the data collected in the vicinity of catch basins. It should also be noted that PECs for numerous chemicals (e.g., benzo[a]pyrene, benzo[a]anthracene, indeno[1,2,3-cd]pyrene) were exceeded in certain surface soil samples.

At AOC 15 the Port indicates that, "...the PAH-impacted soil in the vicinity of the former cesspools is limited in extent and below a depth of 13 feet." DEQ considers another interpretation of the data to be valid. Analytical data from SB-22 and SB-23 could suggest that: 1) concentrations of PAHs increase with depth, and 2) contamination extends to depths greater than 17 feet bgs. The former cesspools appear to be over the sand-filled channel discussed under DEQ's comment to Section 5.1.3.1. The groundwater gradient in the sand-filled channel likely has a western component. There appear to be few, if any, soil borings located west of SB-22 or SB-23 on or near the interpreted axis of the sand-filled channel, and, as mentioned above none the soil borings extend below the top of the feature. DEQ considers the lack of information about the sand-filled channel to be a data gap for the RI. DEQ expects the Port to develop an approach for further evaluating this geologic feature and the nature and extent of contamination associated with AOC 15.

The report indicates that with regard to metals, "None of the detected metals concentrations exceeded industrial PRGs." This should be revised to acknowledge that at least arsenic exceeds industrial soil PRGs in numerous soil samples.

Section 5.2.1.2. The report should be revised to acknowledge that at least arsenic was detected in concentrations that exceeded industrial soil PRGs.

Section 5.2.2.1. The Port indicates that, "...there are no plumes of COIs at OU1,.." The description of volatile organic compounds (VOCs) data appears to contradict this statement. According to the report the detected concentrations of certain VOCs exceed screening criteria at monitoring wells MW-22 and MW-23 located near the northern property line. The report also indicates that these VOCs were detected at lower concentrations downgradient at MW-3s, suggesting a VOC plume occurs in OU1. Based on site investigation results from the neighboring NW Pipe Site, the DEQ agrees with the Port's suggestion that VOCs detected at MW-22 and MW-23 originate from an off-site source based. The Port should provide DEQ with information to support application of the "Contaminated Aquifer Policy."

Arsenic was detected at numerous monitoring wells above human health screening criteria (i.e., the Fish Consumption SLV). The Port suggests the data is consistent with data collected at other riverfront sites, but provides no supporting documentation. Figure 20 should be revised to include arsenic data for DEQ's information and completeness.

Section 5.3.2.2. In our letter dated July 20, 2005, DEQ requested that catch basin samples be collected and analyzed to assess residual concentrations of pesticides, if any. The Port declined, indicating the data would not be representative of historic activities because the catch basins are routinely cleaned out, and sediments are removed and properly disposed. DEQ requests copies of the catch basin data used to characterize the material for disposal.

Section 7.2.1.1 and Table 7B. The SLV for dibenzofuran is critical to the ecological risk assessment. If the Port wants to conduct a current evaluation of the basis for the dibenzofuran toxicity factors, DEQ will be open to a re-examination of the SLV for this project.

Section 7.2.1.1 and Tables 30 and 31. To be protective of benthic organisms in the groundwater discharge to surface water pathway, the DEQ does not typically consider dilution of groundwater contaminants. Dilution should not be included in comparison to screening levels (see Section 5.2 of the JSCS). However, considering such dilution can be incorporated as one aspect in a weight-of-evidence risk management evaluation. The groundwater discharge to surface water pathway should also recognize and evaluate the planned actions as part of the Terminal 4 Early Action Project (e.g., groundwater discharge into confined disposal unit, capped, or dredged areas).

Within Portland Harbor, the DEQ is not conducting a traditional risk assessment of the groundwater/river exposure pathways. The JSCS requires the comparison of upland contaminant concentrations in groundwater to the JSCS SLVs. Based on the JSCS screening, DEQ will prioritize the site and migration pathway as high, medium or low priority for source control. Medium priority sources will either become dormant until the in-water project provides direction as to the significance of the source, or additional investigation or risk evaluation conducted to determine if source control is warranted. The weight of evidence evaluation presented in this section is appropriate for a medium priority source such as the subject site.

Table 4. The table should be revised to include a column that provides the reconnaissance groundwater sample collection depth interval.

Table 7A. Detected concentrations and MRLs for dibenzofuran are exceeded in the table and are not highlighted. The tables should be reviewed, checked for accuracy, and revised appropriately.

Table 7B. The MRL for many samples (e.g., SB-70 through SB-78) are elevated above screening criteria. This data should be reviewed and the Port should discuss what, if any, influence this has on data interpretations for OU1 and OU2.

Table 16A. VOCs are detected in groundwater, so a screening for the volatilization to indoor air pathway should be conducted. The VOC concentrations are low, but this comparison needs to be made in relationship to RBCwi values.

Tables 20A through 26B. Reconnaissance groundwater sample collection depth intervals should be provided in the tables for purposes of comparing data between borings and completeness.

Table 27. The values in the table should be explained as cancer risk values. The use of this modified screening approach (90% UCL combined with CTE values) was explained to DEQ prior to submittal of the draft RI report. DEQ did not approve or object to the approach at that time, but has since decided that such a screening approach is not acceptable. However, DEQ recognizes that the exceeding of conservative screening values is marginal. To address this issue, DEQ proposes that soil concentrations be evaluated based on smaller exposure units that would be appropriate for an industrial site. This could allow us to focus on the smaller areas with higher soil concentrations, and not the larger areas with lower soil concentrations.

The 90%UCL on the mean concentration of benzo[a]pyrene in OU2 is 2.1 mg/kg (Table 28), which is ten times the industrial soil PRG of 0.21 mg/kg. This means that there is a potential soil hot spot in this operable unit. Dibenzo[a,h]anthracene is the only other PAH to have the 90% UCL exceed the PRG.

Figure 21. Arsenic data should be shown in the figure as the detected total and dissolved concentrations exceed screening criteria.

Figures 2 and 3. These figures utilize different reference elevations for the boundary of OU1 (1.7 feet CRD) and OU2 (3.4 feet NGVD). The two figures should be reconciled and the Draft RI Report figures should be reviewed and revised for consistency.

Figures 8, 9, and 10. The T4S1 RI focuses on the Fill Unit and the upper Alluvial Unit. The geologic cross sections should illustrate the Port's interpretation of the relationship of these units beneath the facility (e.g., thickness, horizontal extent, depth of contact, contact relationships).

Figure 11. The boundary of OU1 and OU2 along the Willamette River is intended to correspond approximately with the shoreline of the facility. The equipotential contours shown on this figure appear to extend into the river. The figure should be reviewed and revised as appropriate. This comment also applies to many of the figures included in Appendix D.

Figure 12. This figure references other figures that provide soil data for selected portions of OU1 and OU2. The figure should be revised to indicate that OU1 and OU2 data are shown by Figure 13 and Figure 14 respectively. The figure numbers for the report should be revised accordingly.

Figures 13, 14, 16, and 18. For completeness, the tables nested in these figures should include PECs for the analytes listed.

Figure 16 and Figure 18. It is unclear how "background" metals values were selected from the cited reference (i.e., the values do not appear to be internally consistent). For example, DEQ's review of the cited reference suggests the "90% percentile value" for lead in Clark County, Washington is 17 mg/kg, but tables and figures use 24 mg/kg (see http://www.ecy.wa.gov/pubs/94115.pdf for a correction to the cited reference table by the authors). Industrial soil PRGs for metals should be added to the figures to be consistent with the text of the Draft RI Report (see Section 4.1.3) and for completeness.

Figure 16. The references to related figures should be revised. Lead data for soil borings SB-77 and SB-78, and surface soil samples S-20 through S-22 are shown on Figure 17. The results of analyzing composite riverbank surface soil samples for metals are shown by Figure 18.

Figure 17. Screening criteria for lead in soil should be provided for DEQ's information, or the figure should indicate that relevant criteria were not exceeded by the samples shown.

Figure 19. Inhalation of volatiles from groundwater should be considered as a complete pathway given the presence of HVOCs in groundwater.

Figures 20 and 21. The text indicates that screening criteria for certain VOCs (e.g., tetrachloroethene) were exceeded at monitoring wells MW-22, MW-23, and MW-3s. This data is not included on the figures which should be revised as appropriate.

Appendix A – Risk Assessments

Section 2.7.3. Preventing adverse effects on survival and growth are noted as goals, but effects on growth should be included in the "candidate assessment endpoint" bullets. Exposure point concentrations are calculated using all the data in each operable unit. Because of the large areas of essentially no ecological habitat, it would be more relevant to focus on the chemical concentrations present in the small areas of habitat, such as the river bank (see Figure 2.8-1).

Section 2.9.1 and Tables 3.11-5 and -6. In the first paragraph, there is a statement that "total concentrations probably do not represent the fraction in groundwater that will ultimately be transported to the river." This is not necessarily the case. DEQ typically requires analysis of unfiltered samples for metals because of the concern that chemicals can be transported on colloids (greater than 0.45 microns) in groundwater.

In the last paragraph, there is a statement that "no aquatic organisms in the Willamette River would be exposed to undiluted groundwater." This is true for many organisms in the water column, such as most fish, but benthic organisms are exposed to transition zone water that may contain chemicals in concentrations similar to that in groundwater. Without a specific study of transition zone water, DEQ will assume that groundwater concentrations in monitoring wells in the downgradient portion of the site are representative of concentrations in transition zone water. Also, benthic organisms are considered to be immobile, and therefore averaging of groundwater

concentrations is not appropriate. For protection of benthic organisms, downgradient groundwater concentrations in individual monitoring wells should be compared directly to screening values. In most cases, it will not be possible to consider upper confidence levels on the arithmetic mean, so maximum concentrations should be used. Also, DEQ's ecological risk assessment guidance was revised in February 2005 to clarify that it is not appropriate to multiply water screening values by 5 to obtain screening values for non-threatened and endangered species, including mobile receptors such as fish. Given these considerations, the CPEC exceedances (for instance, as shown on Figure 2.8-2) indicate potential threats to benthic and water column organisms.

In addition to the issues discussed above, there are other factors that are appropriate for consideration in the in-water risk assessment, and some of these were presented in the report. However, a comprehensive risk assessment should include the results of additional in-water data, including sediment sampling and bioassays. For this reason, it appears premature to reach a final conclusion at this time regarding in-water risks and expects that this matter will be resolved in the EPA/LWG in-water risk assessment.

See comment on RI Section 7.2.1.1 concerning groundwater dilution and evaluating in-water risk.

Section 2.9.3. The focus on the river bank is appropriate. However, it is not acceptable to consider bank stabilization as the primary remedial alternative and not address the issue of the potential impact of chemicals in bank soil to upland receptors. Bank stabilization to prevent erosion to sediment may not necessarily address pathways to upland receptors.

Section 3.11.1. The modified screening using CTE values is presented here. An alternative approach should be presented, as discussed in the comment to Table 27.

Table 3.10-6. The source of the PRG value of 23,000 mg/kg for residual oil needs to be presented.

Table 3.10-8. Human health screening is for fish consumption only (not drinking water consumption).

Table 3.11-1. See comment on Table 27 regarding the use of a modified screening approach.

Table 3.11-4. The CTE values use an inhalation rate of 15 m^3/day. Use of this value (or any value other than EPA's default values of 20 m^3/day) requires the adjustment of inhalation toxicity values that were converted to doses (mg/kg/day) or slope factors $(mg/kg/day)^{-1}$ using an inhalation rate of 20 m^3/day. It would be simpler to use EPA's default inhalation value of 20 m^3/day.

Figure 2.8-1. This figure shows location of samples exceeding upland ecological screening levels. This information can be combined with habitat location to identify the specific areas of potential ecological concern.

Level I Scoping form. The cumulative percentages of habitat do not total to 100 percent. The majority of the site should be considered ruderal or otherwise indicated as unsuitable as ecological habitat.

Appendix B-1e and B-1j. Plants are evaluated using a 90% UCL on the mean instead of the maximum value. As pointed out in the text, DEQ guidance specifies that plants should be evaluated using the maximum soil concentration because plants are not mobile.

Photographs. The photographs of the north side of Slip 1 indicate potential ecological habitat.

Draft Storm Water Evaluation (Slips 1 and 3)

General Comments

DEQ's concerns about the Port's storm water evaluation approach, described in our July 20, 2005 letter, remain unresolved. The upland RI must identify potential source areas that result in storm water contamination (e.g., erodible soil) so that source control measures can be evaluated. This storm water evaluation was conducted as part of the T4 Early Action Recontamination Assessment and did not incorporate information gathered as part of the upland RI. DEQ expects the storm water evaluation to be based on the areas of concern and surface soil data presented in the RI.

Storm water data presentation, discussion, and analysis are inadequate. The analytical results from the initial sampling work are provided but are not discussed in terms of the data collection objectives (i.e., assess differences between basins exhibiting a range of sizes and paved areas). Furthermore, there is no discussion of how the sediment data and/or storm water analyses were interpreted or used in developing the scope of work for additional storm water sampling at the facility.

Based on the data compiled in Table 4, DEQ concludes there is evidence that the storm water contaminant pathway is complete. Detected concentrations of contaminants of interest in certain samples (e.g., Basin L) exceed criteria listed in the JSCS applicable to storm water solids. In the case of Basin L, detected concentrations of numerous PAHs in the solids component of storm water exceed probable effect concentrations for sediment.

The Port has recommended additional storm water sampling at the site including in-line sediment and "whole" storm water sample sampling and analysis. Whole sample storm water data must be compared to relevant storm water criteria in the JSCS. In addition, the report will provide an analysis of potential sources of contaminants of interest detected in storm water for each drainage basin as appropriate (e.g., analytical data for erodible soil within 100 feet of a catch basin).

Specific Comments

Section 1. The Port should clarify the status of basin 52-C. Regardless of whether the basin is within the T4 Slip 1 or Slip 3 boundaries, discharge from the basin presents a recontamination potential and must be assessed. If recontamination potential for areas outside the Slip 1 or Slip 3 boundaries is to be completed as a separate phase of work, the Port should reference that proposal in this document.

It is not clear which outfall 52-C or O-SJ17PP is in Appendix A, Figure 4 and the associated text that the Port doesn't know. The Port should coordinate with the City of Portland to ensure that the outfalls are correctly identified.

Section 2.2. Please provide a table detailing the frequency or schedules for the following referenced activities:

- Storm water conveyance system inspection, cleaning, and maintenance work;
- Deployment and maintenance of catch basin inserts; and
- Sweeping of impervious surfaces.

Section 4.3.1. DEQ understands that the objective of the sediment sampling program was to collect representative samples for the three to four month period of sampler deployment. DEQ requests additional information regarding the following potential limitations of the sampling methodology.

- The sample container volume would appear to limit the quantity of sediment that can be collected in basins producing appreciable quantities of sediment. In these cases it seems that samples would be biased towards sediment generated by storm water events occurring soon after container deployment (i.e., the container become less efficient at trapping sediment the more sediment accumulates).
- The report does not indicate the traps were checked during their deployment. If this is the case, and there is the potential for the 1st bullet to occur, there is uncertainty as to the period of time sediment accumulated in the sample container.

DEQ considers these comments relevant to any future storm water sampling work conducted at the site.

Section 4.2. Appendix A includes numerous references to "Basin C." It appears that samples were collected from the basin, however the it is not mentioned in the body of the report. Basin C information may have been excluded because it is not part of the Terminal 4 Slip 1 or Slip 3 investigation areas. Please clarify this in the report.

Section 4.4. DEQ's general comment is applicable to this section.

Section 5.1. Contaminants of interest should also include diesel-range and oil-range petroleum hydrocarbons and phthalates (see storm water fact sheet at: http://www.deq.state.or.us/nwr/PortlandHarbor/06NWR022.pdf).

Section 5.3.1. The report acknowledges the potential that insufficient sample volume may result in incomplete sample analysis. However, corrective action is not proposed to address this scenario. DEQ expects that corrective action(s) be identified so that the data collection objectives of sampling program are met given the known limitations of the previous sampling work. For example, the Port should consider increasing the size/number of containers to increase the volume of the collected sample.

Section 5.3.2. Sample containers should be checked on a routine basis (e.g., after storm water generating events) to visually observe whether the sample container(s) are full. The sampling program should consider how this scenario will be incorporated into the storm water evaluation and the data used.

Section 5.2. Basin N should be added to the list of "Basins of Interest" per DEQ's expectations provided in our letter dated July 20, 2005.

Section 6. The Port should explain why the method of data analysis described in this section of the SWE was not used to evaluate data collected between February and June 2005.

Table 2. The table should be revised to include the depth and elevation to the top and bottom of storm water conveyance system piping. This information is needed to assess the potential for groundwater to infiltrate the conveyance piping.

Figure 6. The proposed sampling locations for basins Q and M exclude portions of the storm water conveyance systems. For example, the Basin Q sample location appears to be located upstream of the entire Cargill Leasehold system. DEQ expects that the sample locations be shifted sufficiently downstream (i.e., towards Slip 1) that inputs from all contributions to the basin conveyance piping system are captured.

Appendix A. An indication of particle size (e.g., gravel, sand, fines) should be provided for the samples collected. The follow-up report should describe whether the material collected is representative of particle sizes of most concern for mass loading (i.e., fines).

Next Steps

Please submit a written response to these comments within 30 days. The DEQ understands that the final RI Report will be submitted after comments have been resolved, but prior to completion of the storm water evaluation (to be submitted as an RI addendum). The DEQ expects that the storm water evaluation, including sampling and analysis of storm water liquid and solids, will be completed during the fall 2006 to spring 2007 wet season.

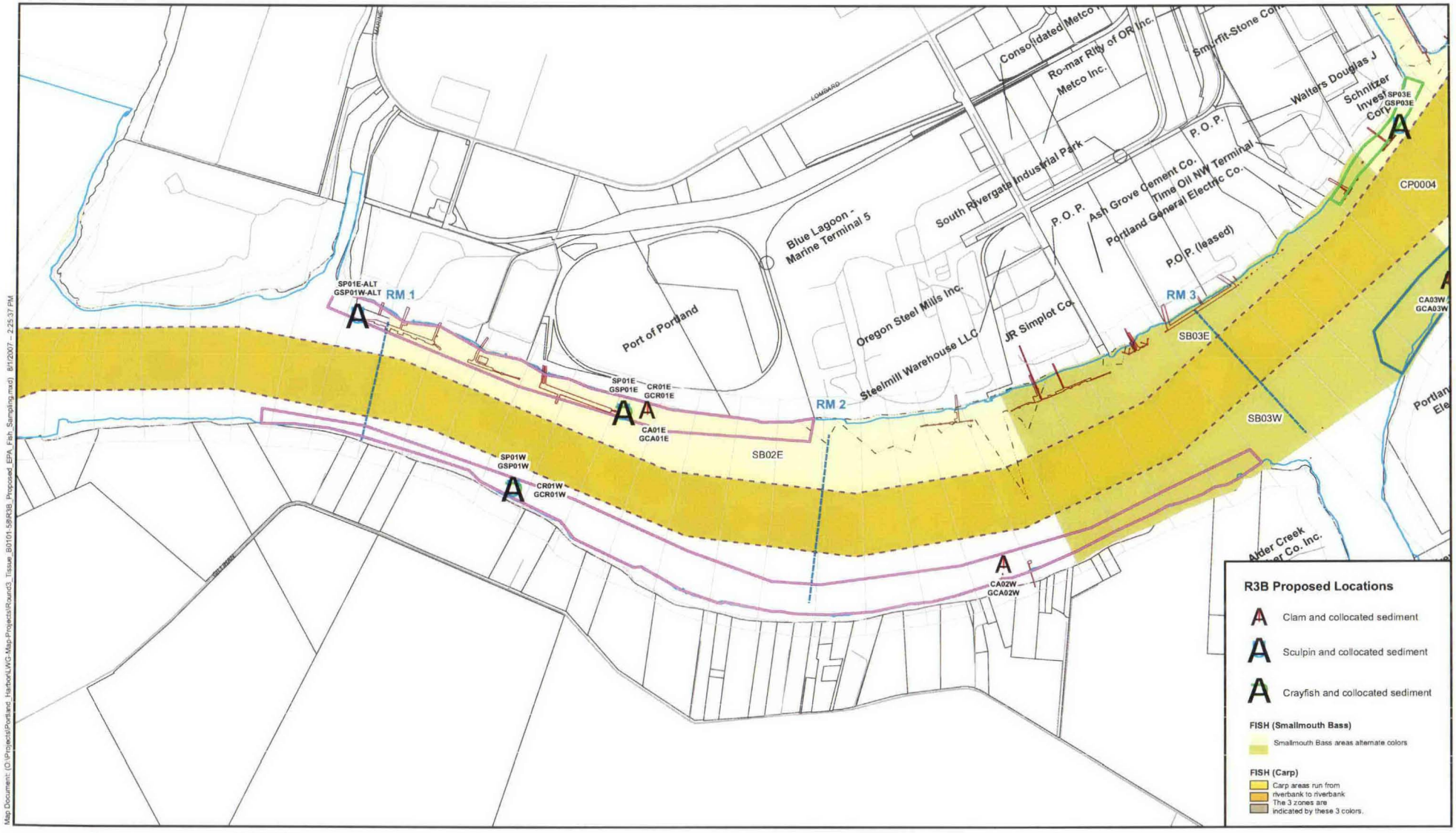
Please call me at (503) 229-5326 if you have questions.

Sincerely,

Tom Gainer, P.E.
Project Manager
Portland Harbor Section

cc: Anne Summers, Port
Amanda Spencer, Ash Creek
Dana Bayuk, Mike Poulsen, and Tom Roick, DEQ NWR

LAW #1579729



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integral consulting inc.

LWG Lower Willamette Group

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

0 200 400 600 800 1,000 Feet

Map Features:

R3B EPA Proposed Locations

CLAMS, Crayfish, Sculpin

- Sculpin Only
- Clams Only
- Crayfish & Sculpin
- Clams & Crayfish
- Combined BT, CR, SP
- AOPC_Boundary
- Bridges
- Docks and Structures
- Navigation Channel
- River miles
- Waterfront Taxlots

Sample ID Codes
CA = clam
CP = carp
CR = crayfish
SP = sculpin
G = surface sediment grab
E = east
W = west

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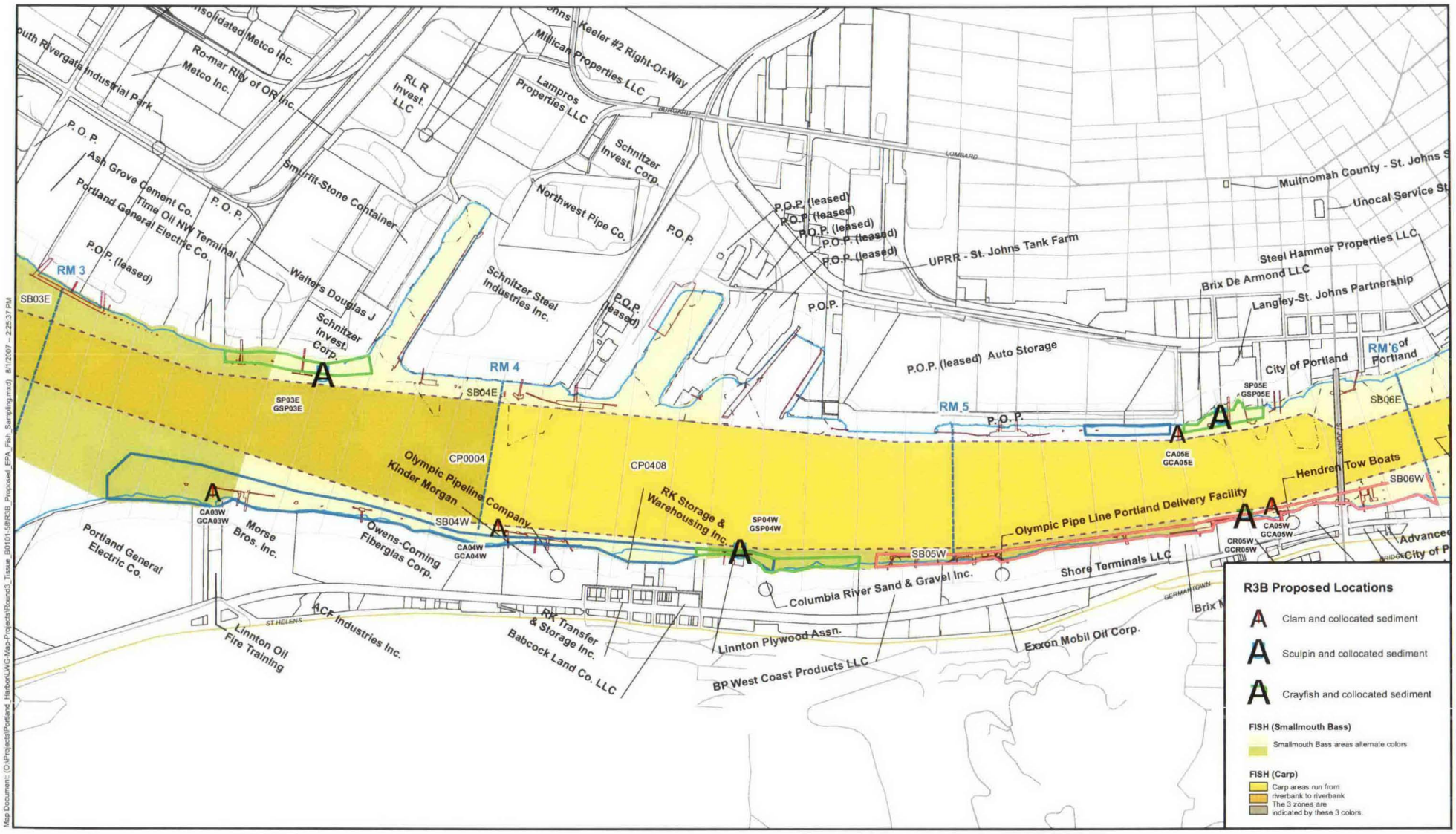
Figure 2-1a
Portland Harbor RI/FS
Proposed Sampling Locations
Biota and Collocated Sediment
RM 0 to 3

CARG001293



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FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS.
Channel & River miles: US Army Corps of Engineers.
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AOPC_Boundary
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Figure 2-1b
Portland Harbor RI/FS
Proposed Sampling Locations
Biota and Collocated Sediment
RM 3 to 6

CARG001294

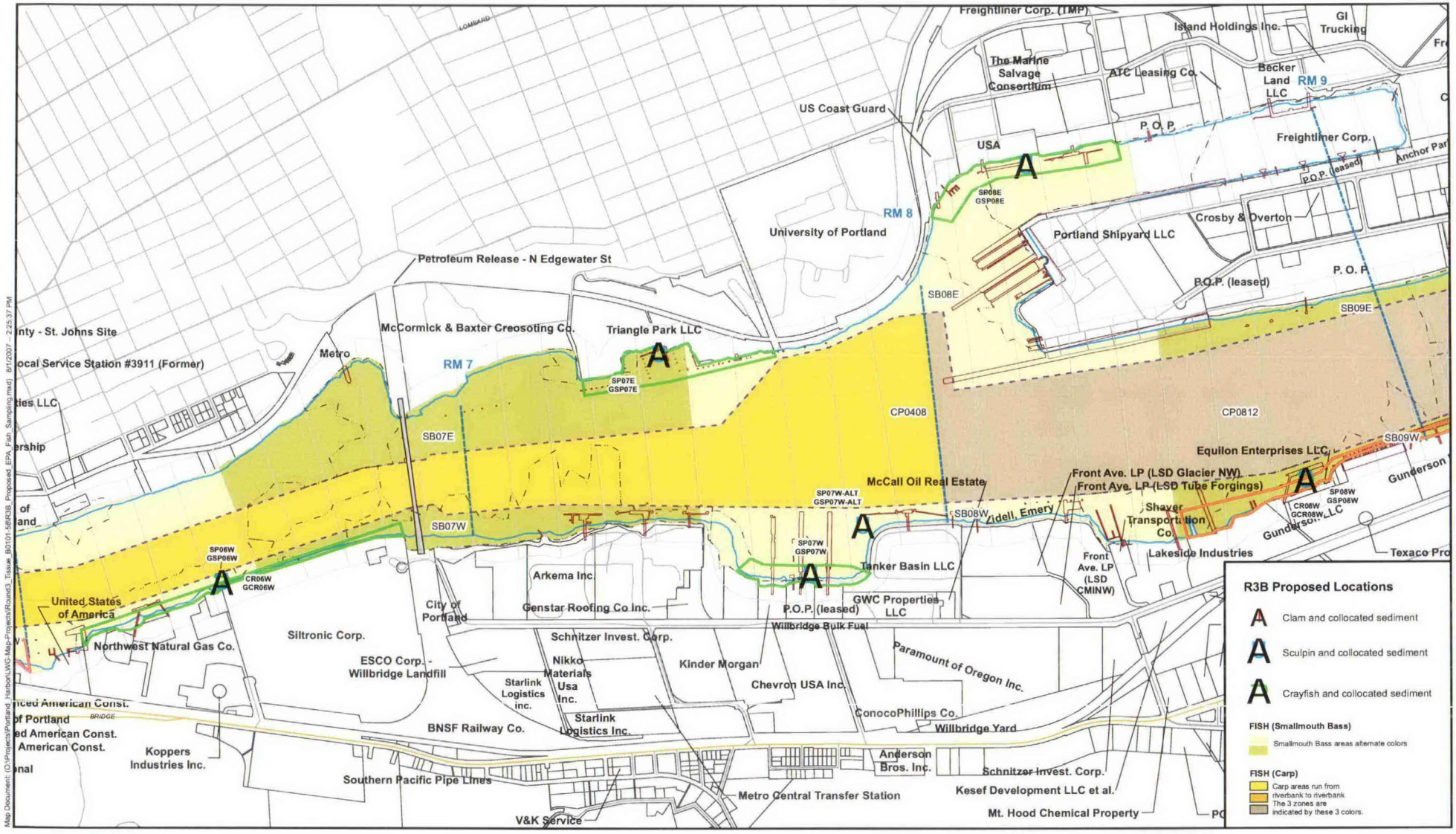

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Figure 2-1c
Portland Harbor RI/FS
Proposed Sampling Locations
Biota and Collocated Sediment
RM 6 to 9

CARG001295

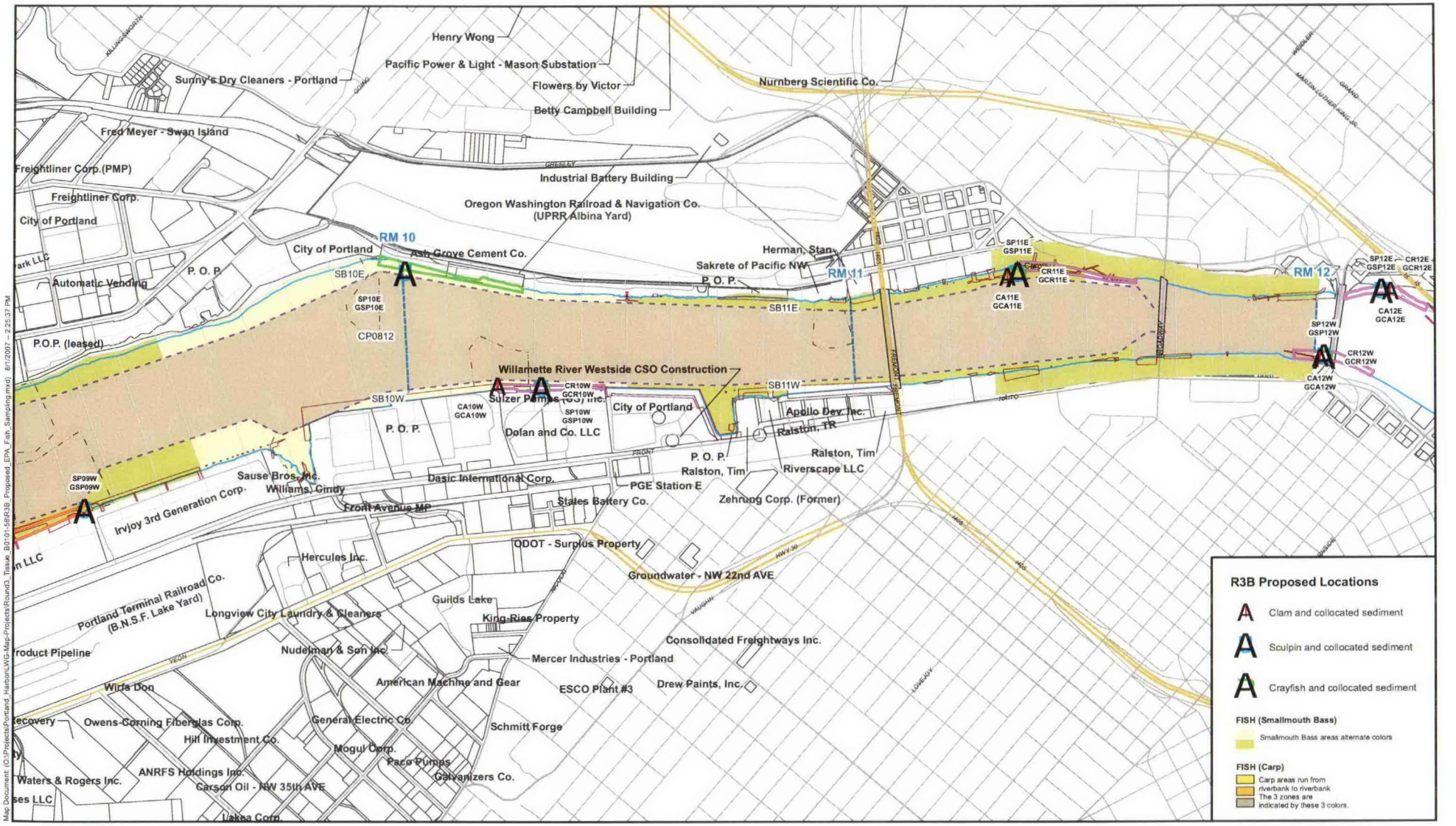

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Figure 2-1d
Portland Harbor RI/FS
Proposed Sampling Locations
Biota and Collocated Sediment
RM 9 to 12

CARG001296

LWG
LOWER WILLAMETTE GROUP

PORTLAND HARBOR RI/FS

ROUND 3B FIELD SAMPLING PLAN FOR FISH AND INVERTEBRATE TISSUE AND COLLOCATED SURFACE SEDIMENT

DRAFT

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August 10, 2007

Prepared for:
The Lower Willamette Group

Prepared by:
Integral Consulting Inc.

IC07-0019

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF ACRONYMS

ACG	analytical concentration goal
CAS	Columbia Analytical Services
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CLP	Contract Laboratory Program
COIs	chemicals of interest
DQO	data quality objective
DGPS	differential global positioning system
EES	Ellis Ecological Services
EPA	U.S. Environmental Protection Agency
EQuIS	Environmental Quality Information Systems
ERA	ecological risk assessment
ESA	Endangered Species Act
FSP	field sampling plan
GPP	Generator Powered Pulsator
HHRA	human health risk assessment
HSP	health and safety plan
ISA	initial study area
LWG	Lower Willamette Group
LWR	lower Willamette River
MDL	method detection limit
MRL	method reporting limit
MGP	manufacturing gas plant
NAD83	North American Datum of 1983
NOAA	National Oceanic and Atmospheric Administration
PAHs	polycyclic aromatic hydrocarbons
PCBs	polychlorinated biphenyls
PCDD/Fs	polychlorinated dibenzo-p-dioxins/furans
PM	project manager
QA	quality assurance
QC	quality control
QAPP	quality assurance project plan
RI/FS	remedial investigation and feasibility study
RM	river mile
RV	research vessel
SAC	sampling and analysis coordinator
SOP	standard operating procedure
SVOCs	semivolatile organic compounds
TOC	total organic carbon
TBT	tributyltin
WHO	World Health Organization

1.0 INTRODUCTION

This field sampling plan (FSP) presents the approaches and procedures to be used in the Round 3B fish and invertebrate tissue and collocated sediment sampling activities for the remedial investigation and feasibility study (RI/FS) of the Portland Harbor Superfund Site (Site). The Round 3B fish and invertebrate tissue data will supplement the Round 1, Round 2, and Round 3A fish and invertebrate tissue data, and represents the final tissue collection effort to be conducted as part of the RI/FS.

The U.S. Environmental Protection Agency (EPA) has directed the Lower Willamette Group (LWG) to collect additional composite samples of five fish and shellfish species previously collected for the Portland Harbor RI/FS. These include Asian clams (*Corbicula* sp.), crayfish, sculpin, smallmouth bass, and carp.

The fishing and sample processing methods to be used build upon previous experience collecting biota at the Site as described in the Round 1 Field Sampling Plan (FSP; SEA et al. 2002), the Round 1 Laboratory Quality Assurance Project Plan (QAPP; SEA 2002b), the Round 2 Benthic Invertebrate FSP (Windward and Integral 2005) and supplemental memorandum (Windward 2005), the Round 2 QAPP (Integral and Windward 2004) and QAPP Addendum 6 for the benthic invertebrate study (Integral 2005), and the project health and safety plans (HSPs; SEA 2002a, Integral 2004). All sampling and analysis protocols in this FSP are not inconsistent with the protocols used in previous FSPs and QAPPs for fish and invertebrate tissue and collocated sediment.

1.1 SUMMARY OF APPROACH

To meet the sampling objectives of the Round 3B fish and invertebrate tissue study, several fishing methods will be utilized. The target sampling areas agreed upon by the LWG and EPA for smallmouth bass, carp, sculpin, crayfish, and clams will be extensively sampled during the anticipated two- to three-month sampling period (from mid-August through October 31, 2007). Clam collection and collocated sediment collection for all small home-range species may be extended from mid-October through early November 2007. The general sampling approach for each of the target species is described below:

- **Asian clams (*Corbicula* sp.).** One boat with a crew of three people will deploy a benthic sledge, and a second boat with a crew of two people will process sediment from the benthic sledge boat.
- **Crayfish.** One team of two people will deploy/retrieve traps for crayfish.
- **Sculpin.** At least two teams of three people will deploy/retrieve set lines and backpack electrofish.

- **Smallmouth Bass and Carp.** One to two boat teams of three people each will be dedicated to boat electrofishing. Other fishing methods, including backpack electrofishing, angling, set lines, and beach seines, may be used if needed.

Details regarding these sampling methods and the sampling areas are provided in Section 4.

Collocated surface sediment samples will be collected for the small home-range species (i.e., clams, crayfish, and sculpin). Surface sediment samples will be collected using a van Veen grab sampler. Composite surface sediment samples will be prepared to reflect the locations from which fish or shellfish were collected for each sample, as described in Section 4.2.4.

EPA has specified the target sample areas and numbers of samples of each species to be collected in Round 3B (Humphrey and Blischke 2007, pers. comm.). This FSP addresses sample collection at all EPA-specified locations within the RM 2 to 11 Study Area. If the LWG is directed to collect samples beyond RM 2 to 11, an FSP addendum consisting of supplemental tables and maps identifying the additional target sample locations will be prepared.

1.2 DOCUMENT ORGANIZATION

The remaining sections of this document describe the sampling design and field procedures that will be used to collect fish and invertebrate tissue samples during Round 3B. Section 2 describes the sampling design and proposed schedule. Section 3 summarizes the project team organization and communication/information flow processes. Section 4 details the procedures that will be used in the field, including specific sampling methods for collecting tissue and collocated sediment samples. Section 5 summarizes how the data will be reported. Finally, references are provided in Section 6.

Field sampling forms are found in Appendix A, Appendix B contains SOPs for fish and crayfish sampling and processing, and Appendix C contains an SOP for sediment sample collection.

2.0 DATA NEEDS AND RATIONALE

The *Portland Harbor RI/FS Comprehensive Round 2 Site Characterization Summary and Data Gaps Analysis Report* (Integral et al. 2007) summarizes the site data collected to date and presents an evaluation of the data needed to complete the RI/FS. Although the Round 2 report identified additional data needs (e.g., sediment chemistry), tissue data collected to date for the Portland Harbor RI/FS were considered sufficient to complete the RI/FS.

In its June 8, 2007 letter to the LWG (Humphrey and Blischke 2007, pers. comm.), EPA Region 10 reached a different conclusion about the adequacy of the tissue data set for completion of the RI/FS and indicated additional composite tissue samples from various species were needed to meet two primary data quality objectives (DQOs). Excerpts from these DQOs are listed below:

- **Contaminant of Interest Uncertainty** – "for refining uncertainties in contaminant of interest (COI) tissue concentrations in order to ensure that the full range of contaminant sources are captured in the tissue sampling," and "to ensure a representative data set both to identify sources and to characterize ranges in risk for both ecological receptors and humans"
- **Food Web Model Calibration and Validation** – "to confirm the utility, ability, and accuracy of the Food Web Model to meet its objectives."

The LWG reviewed the tissue data needs identified by EPA in light of specified DQOs and also discussed the data needs rationale with EPA in a series of technical meetings. These discussions did not alter the LWG conclusion that the tissue data compiled in the Round 2 report were sufficient to complete the RI/FS. The LWG recognized, however, that collecting additional tissue data proposed by EPA may be the most expedient path toward the common goal of completing the RI/FS in a timely manner. The sampling program described in this FSP is designed to implement elements of EPA's Round 3B biota sampling program that apply to sampling locations within the Study Area. This sampling program consists of a total of 49 tissue sample composites (6 clam, 5 crayfish, 12 sculpin, 17 bass, and 9 carp) and 23 collocated surface sediment samples collected from RM 2 through RM 11 of the LWR.

2.1 SAMPLE TYPES, NUMBERS, AND ANALYSES

The proposed sample numbers and target fishing locations for the five species to be collected (clams, crayfish, sculpin, smallmouth bass, and carp) along with collocated surface sediment samples are listed in Table 2-1 and mapped in Figures 2-1a-c. Table 2-2 presents the types and numbers of fish, invertebrate and collocated surface sediment samples to be collected and the analyses to be performed on each sample type. Table 2-3 presents the target size ranges and expected weight ranges of the fish and shellfish.

Smallmouth bass and carp will be filleted (skin on) and composite samples of fillets and remaining bodies will be analyzed separately.

Every effort will be made to collect samples of the five varieties of fish and shellfish at each target location as described in this section. The selected fishing methods are likely to be the most effective at capturing fish and shellfish. However, the number of individuals that are collected at each location (including numbers in composites) will depend upon their presence in the collection area and the success of the fishing methods. The final number of samples collected for this study may vary from the targets described in this section. All tissue sets collected will be harvested from areas identified by EPA and the LWG. If the final numbers of samples collected do not meet the targets described in this section following implementation of this FSP, EPA will not require further sampling in the identified areas nor will it broaden the areas where harvesting occurs using the techniques identified in this FSP.

Targets for each species are described below:

- **Clams**. A total of six composites will be targeted, one from each of the following areas: Sauvie Island, downstream from Gasco between Multnomah Channel and RM 4.6 (two locations), between RM 4.8 and 6.0, downstream of Mar Com near RM 5.5, and Sulzer Pumps. At each sampling station, clams will be collected from an area of up to 3,500 m^2 (approximately 37,600 ft^2). Clam stations will be determined in consultation with EPA during a reconnaissance survey of potential clam habitat. All clams collected at a station will be composited into one tissue sample. A minimum of 50 grams of soft tissue will be targeted for each station. A single collocated surface (0-10 cm) sediment sample will also be collected from each area where clams are successfully sampled following the sampling protocol used in Round 2 (Windward and Integral 2005).
- **Crayfish**. A total of five composites will be targeted, one from each of the following areas: Sauvie Island, downstream from Gasco between Multnomah Channel and RM 4.6, Gasco/Siltronic, Gunderson (near Shell dock structure), and Sulzer Pumps. As in Round 1, specific crayfish fishing areas within each target sampling location will be identified during a site reconnaissance with EPA and marked (e.g., spray paint) in 100-ft widths along the shoreline. A minimum of 300 g will be targeted for each sample (approximately 12 or fewer crayfish) with a minimum size of 100 mm for each individual. Following successful collection of a crayfish composite from a target location, a collocated surface sediment composite will be collected as described in Section 4.6.2.
- **Sculpin**. A total of 12 composites will be targeted, one from each of the following areas: Sauvie Island, Time/Premier Edible Oils, Linnton Plywood, Mar Com, Gasco/Siltronic, Triangle Park, Swan Island Lagoon (U.S. Coast Guard and Fred Devine), Willbridge, Gunderson (2 sites), UPPR/Goldendale, and Sulzer Pumps. Specific fishing areas within each target sampling location

will be identified during a site reconnaissance with EPA and marked (e.g., spray paint) in 100-ft widths along the shoreline. Each composite will contain a minimum of 300 g (approximately 33 or fewer fish), if possible, with a minimum fish size of 90 mm (SEA et al. 2002). Following successful collection of a sculpin composite from a target location, a collocated surface sediment composite will be collected as described in Section 4.6.2.

- **Smallmouth Bass**. Seventeen composites each consisting of five individual fish will be targeted. Target samples will include one composite for each 1-mile river section from each river bank (east and west) from RM 2.5-11.5 (9 miles with 2 composites per mile), excluding Swan Island Lagoon[1]. Based on Round 1 sampling results, the target total length range for smallmouth bass was modified from the original so that the new target range is now 225 to 355 mm. Smallmouth bass smaller than 225 mm will not be included in the composite samples. Fish larger than 335 mm will be archived and re-evaluated for compositing if insufficient numbers of fish within the target range are not collected. Samples will be filleted and separate composites will be prepared of the fillets and the remaining fish body.
- **Carp**. Nine composites each consisting of five individual fish will be targeted. Samples will include three composites from three LWR reaches (RM 2-5, RM 5-8, and RM 8-11). An attempt will be made to capture carp from an overall geographic area within each fishing zone. That is, if all five carp are collected at a single point within a fishing zone, two additional trials will be made to collect carp from other areas within that fishing zone. To provide consistency with the Round 1 data set, the target total length range for carp is 508 to 677 mm. Samples will be filleted and separate composites will be prepared of the fillets and the remaining fish body.

Overall, a total of 49 composite samples of fish and invertebrate tissue and 23 composite samples of collocated surface sediment are targeted for collection in Round 3B. In addition, 26 composite samples of carp and smallmouth bass fillets will be prepared, if the targeted fish are collected. Target sample locations will be verified and/or further defined during a reconnaissance survey with LWG and EPA staff before sampling is conducted. Furthermore, conditions encountered in the field during implementation of this plan may result in modifications to the sampling design, which could result in satisfying the DQOs with fewer than the targeted numbers of composite samples. EPA will be consulted before any significant changes in the sampling design are implemented.

Biota tissue composites and collocated sediment samples will be analyzed for the target analytes listed in Table 2-4. Table 2-3 shows the target mass of tissue to be collected for

[1] Three 5-fish whole-body smallmouth bass composites were already collected from within Swan Island Lagoon in Round 1.

each species, the target weight of individuals, and the number of individuals required in a composite to meet the target mass. For those species where numerous individuals are needed to attain the target mass (i.e., clams, crayfish, and sculpin), mass rather than number of individuals will be prioritized. Thus, the number of individuals in a sample may be more or less than indicated in Table 2-3. However, a minimum of five organisms will be targeted for smallmouth bass and carp regardless of the mass of the individuals. One post-homogenization split will be prepared for each species provided that sufficient material is collected.

Three surface sediment grabs will be sampled at each successfully collected invertebrate sampling station and homogenized into one composite sample. Tables 2-2 and 2-4 list the total number of collocated surface sediment composites and the chemical analyses for surface sediment samples.

2.2 CONDITIONS OF SAMPLING

Once the Round 3B fish sampling FSP is approved and all collection permits are in place, fish sampling should begin in mid-August and be conducted through October 2007. The major fishing effort will likely occur in September and October. Cessation of fishing efforts in November 2007 will also ensure that tissue compositing schemes can be agreed to by the LWG and EPA in a timely fashion and laboratory analyses of the fish tissue and validation of the data can be accomplished in time to meet the current project schedule.

In order to use an electrofishing boat to capture smallmouth bass and carp, the National Oceanic and Atmospheric Administration (NOAA) Fisheries Service must issue permits for direct take and "incidental take" under Section 10 of the Endangered Species Act (ESA) of 1970. This permit allows activities that may impact listed species. In addition to Section 10 permits, NOAA Fisheries Service must approve scientific research and monitoring activities under ESA Section 4(d) (50 CFR Part 223). Section 4(d) prohibits any take of endangered listed species, but allows for take of some threatened species that does not interfere with salmon survival and recovery.

The LWG has applied for both of these fishing permits. If the Section 10 fishing permit is granted to LWG in time for fishing to occur between mid-August and October 31, 2007, one to two electrofishing boats may be used to collect smallmouth bass and carp within the proposed Portland Harbor area. If the permit is not granted to LWG for 2007, the Oregon Department of Fish and Wildlife (Salem, OR) may be able to assist by providing the LWG with a fish biologist, Mr. Gary Galovich, who has a 2007 Section 10 fishing permit. This optional approach is still being investigated.

If none of the options mentioned above for boat electrofishing are available, LWG will attempt to collect carp and smallmouth bass by angling and by using set lines. Details are provided in Sections 4.6.1.4 and 4.6.1.5. The LWG may also use additional anglers

associated with the Oregon Bass and Panfish Club (Portland, OR) to help with the collection of smallmouth bass and carp.

2.3 PROJECT SCHEDULE

The proposed Round 3B target sampling areas for smallmouth bass, carp, sculpin, crayfish, and clams will be extensively sampled in the proposed period between mid-August and October 31, 2007. Clam collection and collocated sediment collection for all small home-range species may be extended from mid-October through early November 2007.

Smallmouth bass and carp begin migrating away from the river margins towards deeper waters as soon as surface water temperatures begin to drop, and by the end of October, the fishing-effort-to-fish-catch ratio increases significantly, rendering the collection of fish tissue extremely difficult, if not impossible. The drop of surface water temperature also coincides with the upriver migration of salmonids protected under the ESA, so the probability of collecting protected fish species increases. Therefore, fish tissue collection for smallmouth bass and carp will cease at the end of October 2007. The period for electrofishing may be further limited by permit restrictions, for example, the maximum water temperature at which electrofishing is allowed.

3.0 PROJECT ORGANIZATION

The organizational structure for sampling and analysis activities associated with the Round 3B investigation is described in this section, including responsibilities of key project personnel participating in this sampling effort and communication procedures.

3.1 TEAM ORGANIZATION AND RESPONSIBILITIES

Contractors retained by the LWG will undertake the Round 3B sampling and analysis activities. The qualifications of this group are presented in the Portland Harbor RI/FS RI/FS Work Plan (Integral et al. 2004). The organizational structure for this study is shown in Figure 3-1. Project responsibilities are described below.

3.1.1 CERCLA Project Coordinator

Gene Revelas (Integral) is the CERCLA Project Coordinator and manages the Portland Harbor RI and coordinates the overall RI/FS efforts. In this role, he oversees the RI technical work, participates in agency negotiations, and coordinates RI/FS activities with the LWG consultant team and other technical consultants. Mr. Revelas will work closely with the sampling and analysis coordinator (SAC) to ensure that the objectives of the Round 3B field investigation are achieved. In the event that changes in the FSP are needed, he will discuss proposed changes with EPA's project manager (PM) or other designated EPA staff. Changes to the FSP will not be made without prior approval from the EPA PM unless conditions in the field or laboratory require immediate response. In that event, such changes will be approved orally and documented using a Field Protocol Modification Form and will include an explanation of the requirements for an immediate response. The written change report will be submitted to EPA and EPA will not unreasonably withhold its approval of the necessary changes.

3.1.2 Sampling and Analysis Coordinator

Maja Tritt (Integral) is the SAC for the Round 3B biota sampling task and will be responsible for all facets of the sampling and analysis programs. Her specific responsibilities include the following:

- Coordinate the field and laboratory analyses
- Ensure that laboratory capacity is sufficient to undertake the required analyses in a timely manner
- Ensure adherence to the schedule by tracking sampling, laboratory analysis, validation, and data management tasks
- Provide solutions to problems if they occur
- Inform the CERCLA Project Coordinator of required changes to the FSP and QAPP Addendum 9 (Integral, in prep.).

3.1.3 Field Coordinator

Ian Stupakoff (Integral) is the field coordinator and will be responsible for overall coordination of all the field sampling tasks. Specifically, he will be responsible for the following:

- Oversee the planning for each sampling event
- Coordinate field support between multiple sampling events scheduled to begin in August and end in early November, 2007
- Oversee all aspects of the sampling events to ensure that the appropriate procedures and methods are used.

He will work closely with the SAC and will be immediately notified if problems occur in the field. If changes to the FSP or QAPP Addendum 9 are warranted, he will immediately notify the SAC.

Stefan Wodzicki (Integral) will be the designated field coordinator during Mr. Stupakoff's absence from August 10-31, 2007.

3.1.4 Field Crew

Field staff for all sampling events will be drawn from Integral and the LWG's consultant team. The operators of sampling vessels and equipment, as appropriate, will supply additional staff.

For all sampling tasks, the field crew will include the following individuals: site safety officer, field task leader, and field staff.

Mr. Stupakoff or his designee, Mr. Wodzicki, will serve as the site safety officer. The site safety officer will have the following responsibilities:

- Correct any work practices/conditions that may result in personnel injury or exposure to hazardous materials
- Determine appropriate personal protection levels and necessary clothing/equipment, and oversee its proper use
- Verify that the field crew is aware of the provisions of the HSP and instructed in safe work practices
- Verify that the field crew has received the required safety training.

The field task leader will be responsible for adherence to the FSP and QAPP, decisions that involve changes to the FSP and QAPP, cruise preparation, mobilization, sample custody, and chain of custody. Mr. Stupakoff and Mr. Wodzicki will be field task leaders for collection of fish and crayfish tissue and collocated sediment, and Ms. Helle

Andersen (Windward Environmental) will be field task leader for the collection of clam tissue and collocated sediment for the clams.

Various field staff from the consultant team will assist in sample collection, handling, and storage. They will maintain the field sampling logs and notebooks and will be responsible for properly labeling sample containers.

3.1.5 Quality Assurance Managers

Quality assurance managers have been assigned for all aspects of Round 3B sampling and analysis. All quality assurance managers for Round 3B will report to the SAC.

3.1.5.1 Field QA Manager

Mr. Stupakoff (Integral), the field coordinator, will also serve as the field QA manager for all Round 3B sampling activities. He will oversee all aspects of the sampling events to ensure that the appropriate procedures and methods are used. Mr. Wodzicki (Integral) will be the designated field QA manager in Mr. Stupakoff's absence.

3.1.5.2 Analytical Chemistry QA Manager

Maja Tritt (Integral) will be the QA manager for analytical chemistry. She will be responsible for oversight of the analytical laboratories and the validation of chemical data.

3.1.6 Tissue Processing at the Field Lab

Manon Tanner (Integral) will have primary responsibility for tissue sample processing. She will coordinate and direct the processing staff and ensure that all organism handling and processing procedures are conducted according to project requirements.

3.1.7 Data Management

Tom Schulz (Integral) will have primary responsibility for data management. Integral will utilize the Environmental Quality Information Systems (EQuIS) database as the primary repository of environmental data. Mr. Schulz has extensive experience with this database and is familiar with its structure and operation. Prior to the initiation of fieldwork, he will work with the laboratories to ensure that they deliver data that is in the correct format for entry into the EQuIS database. Use of this system will also ensure the easy transfer of data in the required format to EPA.

3.1.8 Laboratory Services

Three analytical chemistry laboratories were selected by the LWG for Round 3B tissue and collocated sediment analyses to ensure analytical capacity sufficient to maintain the schedule set forth in the Administrative Order on Consent/Statement of Work, and to take advantage of special analytical capabilities. These laboratories have demonstrated to the LWG that they have acceptable performance records and are capable of performing the analyses required.

Columbia Analytical Services (CAS) of Kelso, Washington, will homogenize all fish tissue samples and perform all tissue chemistry analyses except for pesticide, PCB congener, and dioxin/furan analyses. CAS will also complete all sediment analyses except for PCB congeners. CAS is a full-service chemical laboratory participating in the EPA Contract Laboratory Program (CLP). CAS staff have special expertise in the analysis of various complex matrices for inorganic and organic parameters. Project experience is demonstrated by participation in the EPA CLP, various RI/FS, and other projects supporting CERCLA activities. Dr. Greg Salata will be the CAS project manager.

Axys Analytical Services (Axys) of Sidney, B.C., Canada, will perform analyses of pesticides, dioxins/furans, and PCB congeners in homogenized tissue samples. Axys is an ultra-trace organic laboratory that specializes in the analysis of these compounds. Ms. Pam Riley will be the Axys project manager.

Vista Analytical (formerly Alta Analytical) of El Dorado Hills, California, will perform analyses of PCB congeners in sediment samples. Mr. Bill Luksemburg will be the Vista project manager.

3.2 COMMUNICATION/INFORMATION FLOW

During field operations, the field staff will report to the field task leader. The chemical laboratories will report to the chemistry QA manager, who is also the SAC for this study. The field coordinator and data manager will report to the SAC. The SAC will report to the CERCLA Project Coordinator. Issues requiring the attention of the LWG or EPA will be communicated by the CERCLA Project Coordinator.

To the extent possible, official communications between EPA and the LWG will occur through their respective project coordinators/managers. In the event that changes in the FSP or QAPP are needed, Gene Revelas, the CERCLA Project Coordinator, will provide the EPA PM with the rationale for the change.

A field protocol modification form (Appendix A) will be completed for any change to the FSP or QAPP; EPA approval will be required for all substantive changes. Any field staff or manager may request changes. The field protocol modification form will be submitted to the SAC. If the SAC approves the change, she will submit the form to the CERCLA Project Coordinator. The CERCLA Project Coordinator may notify the LWG and will submit the forms to the EPA PM for approval. If circumstances require immediate action, verbal authorization may be obtained and the change may be implemented, but a field protocol modification form must still be completed and submitted as soon as possible to document the change and ensure that all managers are informed.

3.3 COORDINATION WITH EPA

3.3.1 Field Sampling Notification

The CERCLA Project Coordinator will notify the EPA PM at least one week prior to beginning field activities so that EPA can schedule any necessary oversight tasks. EPA's PM should contact the CERCLA Project Coordinator to coordinate these activities and determine appropriate logistics. The CERCLA Project Coordinator will notify EPA, in writing, when field activities are completed.

3.3.2 Lab Audits

CAS and Axys have been audited previously in connection with analyses completed for the Portland Harbor RI/FS. Vista's role on this project is limited and their data quality has been very good on past sediment samples from Portland Harbor. If problems arise, chemical laboratories will be audited prior to or during the analysis of samples. In the event that EPA or their designated representative wishes to accompany the LWG project team during an audit, the EPA PM should make this request to the CERCLA Project Coordinator. Following this initial contact, the chemistry QA manager for the LWG project team should interact directly with her counterpart at EPA.

3.3.3 Split Samples

If adequate sample volume is available, split and/or verification samples for chemical testing can be provided to EPA or its designated representative upon request. EPA's PM should contact the CERCLA Project Coordinator to arrange this activity. It is recommended that split samples be collected at those stations where QC duplicates are taken so that EPA's comparison samples are evaluated relative to the field and analytical variability measured by the LWG project team.

4.0 SAMPLE COLLECTION AND PROCESSING PROCEDURES

The following sections describe the detailed sampling procedures, record keeping, sample handling, storage, and field quality control procedures that will be used during Round 3B fish and invertebrate tissue and collocated sediment sampling. Procedures and details of chain of custody and sample shipping are addressed in the Round 2 QAPP (Integral and Windward 2004) and Round 2 QAPP Addendum 9 (Integral, in prep.).

4.1 SAMPLING VESSELS

Three boats will be used for angling and to deploy and retrieve several types of sampling equipment, such as a boat electrofisher, a beach seine net, backpack electrofishers, set lines, and crayfish traps.

A boat electrofisher will be provided by Ellis Ecological Services (EES; Estacada, OR). Boat electrofishing will be conducted from a 20-ft jet sled equipped with a Smith Root Model 5.0 Generator Powered Pulsator (GPP) electrofisher. The boat electrofishing team consists of a pilot and two field staff to collect fish. The field staff will wear chest waders and electrical safety gloves and hold long dip nets at the bow of the boat. They will be secured by a safety rail. This boat will be dedicated to sampling smallmouth bass and carp.

EES will also provide an 18-ft boat with a 30-HP outboard engine and a 14-ft skiff with a 10-HP outboard engine for backpack electrofishing and the deployment and retrieval of set lines for the collection of sculpin.

SWCA Environmental Consultants (Portland, OR) will provide a 20-ft boat with a 125-HP outboard engine as a second boat for backpack electrofishing and the deployment and retrieval of set lines for the collection of sculpin.

Two additional boats belonging to members of the Oregon Bass and Panfish Club may be deployed for angling for smallmouth bass and/or carp.

Marine Endeavors, LLC (Ridgefield, WA) will provide the research vessel (R/V) *Local Motion* for collection of collocated sediment samples for sculpin and crayfish. The *Local Motion* is a 29.5-ft-long fiberglass bowpicker equipped with a Volvo 305-cubic-inch horsepower engine with two Volvo 290 duo prop outdrives.

Two boats will be used for the clam sampling effort. Dave Mullins, Mullins Guide Service, will provide a 25-ft Wooldridge Jet Boat with a hard top and 454-HO engine. The boat is equipped with a davit and hydraulic winch (~ 500 to 1000 lbs) to be used for the benthic sledging effort and subsequent collocated surface sediment sampling. Benthic LLC will provide the R/V *Ross Island Sampler I*, an 8-ft deck, 28-ft length, 3.5- to 4-ft width pontoon boat, to be used for processing the clam samples.

4.2 NAVIGATION AND STATION POSITIONING

Station positioning from the sampling vessel will be accomplished using a differential global positioning system (DGPS), which consists of a GPS receiver on the sampling platform and a differential receiver located at a horizontal control point. The standard projection method to be used during field activities is Horizontal Datum: North American Datum of 1983 (NAD83), State Plane Coordinate System, Oregon North Zone.

At the control point, the GPS-derived position is compared with the known horizontal location, offsets or biases are calculated, and the correction factors are telemetered to the GPS receiver located on the sampling platform. The GPS receiver routes latitude and longitude to an integrated navigation system, which displays the platform's position in plan view. Navigation data, such as range and bearing from the target sampling location, are provided at a user-defined scale to guide the sampling platform's pilot to the desired location.

Positioning accuracies on the order of ± 6 ft can be achieved by avoiding the few minutes per day when the satellites are not providing the same level of signal. The GPS system provides the operator with a listing of the time intervals during the day when accuracies are decreased. Avoidance of these time intervals permits the operator to maintain better positioning accuracy.

Once all of the data are differentially corrected, projected, and compiled, quality assurance checks will be made using digital aerial photography for positional data and the handwritten field notebooks for numeric and categorical data. The resulting spatial database will be stored using GIS. Spatial data and associated attributes will be exported and compiled in spreadsheets for reporting purposes. All GPS coordinates will be e-mailed to Integral's office in Olympia, WA, and incorporated into a fish tissue data master table.

A Trimble GeoExplorer 3 GPS and a Trimble Pro-XRS GPS unit will be used to record coordinate data, the time and date of each sampling effort, and the numbers of fish collected, retained, or released as described below.

4.2.1 Data Dictionary

A data dictionary and menu-driven data collection system will be developed by EES and programmed into the GPS units to facilitate consistent data collection techniques and to minimize data entry errors. In case the GPS unit fails, handwritten field notebooks will also be used to duplicate data collected using the GPS units and make note of any other field observations. The coordinate data will be downloaded periodically from the GPS units, if necessary, differentially corrected (using Portland State University base station data), and projected from geographic coordinates to the state plane coordinate system. The handwritten field notebooks also will be collected from the field crew to accompany the downloaded GPS data. These data will be

reviewed immediately after downloads to communicate and correct any data entry errors with the field crew.

4.2.2 Positional Data for Moving Targets

The area to be sampled by boat electrofishing, benthic sledging, and beach seining will include the collection of line data consisting of "vertices," or points of inflection, collected every 5 seconds and "nodes" collected at the beginning and end of each sampling run. Electrofishing runs will be limited to 500 seconds to reduce the spatial area covered.

For each benthic sledge sampling attempt, GPS data logging will be initiated once the sledge touches river bottom. Cable will be let out to a length of approximately 4 times the water depth. Water depth and cable length will be recorded in the logbook. Once the cable winch is locked, the time for starting the tow will be noted, and the navigation system will continue to record the boat's positions for the duration of 1 minute. The actual tow location will be corrected by subtracting the distance traveled without towing from the total tow length recorded by the GPS. Using simple trigonometry, the length subtracted will be calculated from the point when the benthic sledge touched the river bottom and the time when the cable winch was locked for towing. The actual tow lines will be corrected and plotted on a map using GIS software.

Sampling at each station will be initiated by performing a tow with the benthic sledge at the target coordinates presented in the FSP. If no clams are found in the initial tow, the search area will be expanded within the 37,600-ft^2 area. When clams are found, the remaining tows will be performed in close proximity to the successful tow. A minimum of 10 tows and a maximum of 15 tows will be performed at each station. Each tow with the benthic sledge will be tracked using the GPS.

4.2.3 Positional Data for Stationary Targets

Positional data will be obtained using point coordinates for backpack electrofishing, set lines, and angling efforts. Sculpin and crayfish sampling stations will be assigned at 100-ft fishing areas along the shore line and will be marked on pilings or rocks by spray paint or other types of temporary markers, and the position of each end of the 100-ft area will be recorded on GPS. Repeated deployment of set lines and crayfish traps will be placed within the 100-ft fishing areas no farther out into the river than 100 ft from the low water mark.

A sufficient number of GPS units may not be available for every team to directly record their positional data. As a first priority, GPS units are assigned to the fishing teams that require constant navigation records, such as the boat electrofishers and benthic sledge. Teams without GPS units will be assigned to collect fish at fixed and marked nearshore stations, such as crayfish and sculpin stations, which will already have GPS coordinates on record. Field notebook entries from non-GPS teams will also be transferred to the

fish tissue data master table, and the coordinates necessary for each specific event will be copied from a previous GPS record for each respective fixed station.

4.2.4 Positional Data for Collocated Sediments

Collocated surface sediments will be collected at each successfully sampled clam, sculpin, and crayfish area.

Crayfish and Sculpin - Collocated surface sediments will be collected at each sampling station where sculpin and crayfish were successfully sampled. For each 100-ft fishing area, three equally distant surface sediment grabs will be collected and composited. The coordinates of each sediment grab will be recorded and their physical characteristics described before compositing. Approximately the same volume of sediment from each grab location will be included in the composite sample and homogenized. Table 2-1 shows the pre-assigned sample identification codes for each surface sediment composite sample.

Clams - As explained in Section 4.2.2, once all successful clam tows have been recorded at each clam sampling station, collocated surface sediment samples will be collected based on a Round 2 location-specific sampling approach developed in consultation with the EPA agency team (Windward and Integral 2006). At each station where clams are successfully collected, the riverbed sampling area will be defined by the benthic sledge trawl lines. These areas will vary in size and shape from location to location as a function of the search effort needed to collect sufficient clam biomass. Based on a map that shows the trawl lines along which the clams were collected at each station, a maximum of eight sampling targets will be selected. An effort will be made to situate the target grab locations proportionally to the subareas where the clams were collected. The grab sampling locations at each station will be recorded. The individual grab samples will be combined to generate one composite sediment sample per station. If several samples are taken within a sampling location, the average value for each coordinate will be calculated and assigned to that sampling station.

4.3 FIELD LOGBOOK AND FORMS

All field activities, including positioning coordinates and field observations, will be noted in a field logbook during fieldwork. The field logbook will be a bound document containing individual field and sample log forms. Information will include field personnel, date, time, station designation, sampler, types of samples collected, and general observations. Any changes that occur at the site (e.g., personnel, responsibilities, deviations from the Work Plan or FSP) and the reasons for these changes will be documented in the field logbook and a field protocol modification form (Appendix A).

Logbook entries will be clearly written with enough detail to allow participants to reconstruct events later, if necessary. Requirements for logbook entries will follow the

guidelines specified in the Round 2 QAPP (Integral and Windward 2004). When field activity is complete, the logbook will be entered into the Portland Harbor project file.

A sample collection checklist will be produced prior to sampling and completed following sampling operations at each station. The checklist will include station designations, types of samples to be collected (e.g., one jar for metals), and whether blind field replicates or additional sample volumes for laboratory QC analyses are to be collected.

4.4 EQUIPMENT AND SUPPLIES

Equipment and supplies will include sampling equipment, utensils, decontamination supplies, sample containers, coolers and ice, logbooks and forms, personal protective equipment, and personal gear. Protective wear (e.g., hard hats, gloves), as required for health and safety of field personnel, will be as specified in the HSPs (Integral, in prep.; Windward, in prep.). Sampling equipment and supplies for fish and invertebrate tissue sampling are described in Appendix B. Table 4-1 provides information on sample containers, preservatives, holding times, and sample volume requirements.

CAS will supply sample containers and preservatives, as well as coolers and packing material. Commercially available pre-cleaned jars will be used, and the laboratory will maintain a record of certification from the suppliers.

Sample containers will be clearly labeled at the time of sampling. Labels will include the project name, sample location and number, sampler's initials, analysis to be performed, date, and time. The nomenclature used for designating field samples is described in Section 4.7.

4.5 EQUIPMENT DECONTAMINATION PROCEDURES

All field equipment used to collect and process fish will be decontaminated according to the Fish Tissue Sampling SOP (Appendix B). Equipment described under fishing methods in Section 4.6 below will be decontaminated prior to sampling a new station. All dip nets, buckets, measuring boards, handheld scales, and coolers used to retrieve and store fish will also be decontaminated at each new station. The beach seine will simply be washed in site water during deployment and retrieval. Due to its large size and volume, the beach seine cannot be practically decontaminated using the same protocol as other sampling equipment. However, all fish caught by beach seine will be placed for a few minutes in a decontaminated bucket or cooler containing site water and therefore will be rinsed before being handled and processed.

The benthic sledge used to collect clams and the sediment grab sampler used to collect the collocated sediments will be decontaminated according to the FSP for Round 2 Sampling of Benthic Invertebrate Tissue (Windward and Integral 2005). All other

equipment used in the sampling effort will be decontaminated according to the Fish Tissue Sampling SOP (Appendix B).

4.6 SAMPLE COLLECTION PROCEDURES

The Round 3B field sampling event will include the collection of fish and invertebrate tissue samples as well as the collection of collocated surface sediment samples associated with sculpin, crayfish, and clam tissue collection efforts. The sampling methodologies for each type of tissue and sediment samples are described below.

4.6.1 Fish and Invertebrate Sample Collection

The following subsections describe the sampling equipment and operation for each fishing method to be used during the Round 3B field sampling event. A summary of collection methods for each target species is provided in Table 4-2. Each type of bait that is successfully used to catch fish will be analyzed with the tissue samples.

4.6.1.1 Boat Electrofishing

Boat electrofishing will be conducted from a 20-ft jet sled equipped with a Smith Root Model 5.0 GPP electrofisher. Typically, 3-4 amps of output current will be applied, and the pulse rate will vary between 30-80% of 60-120 volts direct current. Pulse rate and width will be adjusted periodically depending on conductivity, fish species, and behavior. Conductivity, dissolved oxygen, and water temperature conditions will also be independently collected using an YSI Model 85 multi-parameter water quality probe each sampling day and at each location. The electrofisher typically attracts fish from 10-15 ft away. Electrofishing will be conducted for periods of at least 500 seconds, at which point the location and effort will be recorded. The boat electrofishing team consists of a pilot and two people wearing chest waders and electrical safety gloves holding long dip nets at the bow of the boat and secured by a safety rail. Stunned fish will be collected with the dip nets and placed inside large open coolers containing site water.

4.6.1.2 Backpack Electrofishing

Backpack electrofishing will be done with a gas-generator-powered Smith-Root Model 15-D Backpack Electrofisher or a newer model. Settings will be generally in the standard pulse range of I-4 (60 Hz at 4 ms) to K-6 (80 Hz at 8 ms), and can vary in voltage power from 100 volts to 400 volts as per effectiveness. Settings in the Programmable Output Waveform range will be used in some instances. Electrofishing will also be done with a Smith-Root Model 12 with a 24-volt battery or a newer model. The output voltage range can vary from 300-400 volts, depending on fish behavior and water conditions. The pulse range can vary between I-4 (60 Hz at 4 ms) and K-6 (80 Hz at 8 ms). Effort will be recorded in seconds at electrofishing stations to determine catch per unit effort.

The backpack electrofishing team will consist of two technicians wearing chest waders and insulated electrical safety gloves. One technician will carry the backpack unit holding the anode wand in one hand and cathode "tail" dragging behind in the water. The other technician will hold a dip net and a plastic bucket. Once a fish is stunned, it will be scooped with the dip net carried by the second technician and placed inside the plastic bucket. The bucket with fish will then be handed over to the fish-processing team. If fish are to be held for more than approximately 30 minutes before being transferred to the processing team, fish will be placed in resealable plastic bags and stored in a cooler with wet ice. Each bag will be marked with the date, time, station number, fishing technique code, event number, number of electrofishing seconds, and initials of the sampler.

4.6.1.3 Beach Seine

A 100-ft-long pole-seine may be used for beach seining. It requires an 18-ft boat with a 30-HP outboard engine and three people to deploy and retrieve the net. After the net is placed surrounding the fish, technicians on the beach will haul in the "wings" of the net. As the net approaches the beach, fish are driven into the net and hauled up on shore. All fish will be handled with powder-free nitrile gloves, dip nets, and buckets. A total fish count will be taken, and only target species will be sorted into a bucket. The remaining fish will be returned to the water. The bucket with fish will then be handed over to the fish-processing team. If fish need to be held for more than 30 minutes before being transferred to the processing team, each fish will be individually placed in resealable plastic bags and stored in a cooler with wet ice. Each bag will be marked with the date, time, station number, fishing technique code, event number, and initials of the sampler.

4.6.1.4 Set Line

Set lines, also known as trot lines, will be built with 50- to 80-lb braided Dacron line with nylon monofilament leaders. Each trot line will be 100- to 150-ft long with 25-30 #4 and #6 hooks. For sculpin and smallmouth bass, hooks will be baited with earthworms purchased from D&G Bait Co[2]. For carp, set lines with appropriate hook size and bait will consist of corn or pre-formed dough balls. Set lines will be attached to a piling above the water line, slowly stretched out with the help of a boat and anchored at the other end with a lead weight. Set lines may occasionally be attached between two pilings or spread out at the bottom with both ends attached to lead weights, which in turn may be attached by a line to floats at the surface. Set lines will be left onsite overnight and retrieved the following day.

Technicians wearing powder-free nitrile gloves will slowly retrieve the line unhooking the fish and place them inside a clean plastic bucket. Often times, it is difficult to remove a hook without damaging a fish sample. In this situation, it is necessary to cut the nylon leader as far away from the mouth as possible, making it easy to identify a

[2] D & G Bait Co, 15981 SE 122nd Ave, Clackamas, OR 97015, (503) 557-2248.

fish in need of hook removal during sample processing at the field laboratory. All fish containing hooks will be noted in the field notebook. The bucket with fish will then be handed over to the fish-processing team. If fish will be held for more than 30 minutes before being transferred to the processing team, fish will be placed in resealable plastic bags and stored in a cooler with wet ice. Each bag will be marked with date, time, station number, fishing technique code, event number, and initials of the sampler.

4.6.1.5 Angling

Angling will be conducted using a standard rod and reel with monofilament line (6-12 lb test). Smallmouth bass and carp can be caught with a variety of lures, depending on the desired sampling depth. Lead-weighted hooks with attached green-rubber tube jigs can be used to fish the bottom, while plastic crank baits resembling small fish or crayfish can be used to fish the shallower surface waters (0-3 m). Electric trolling motors may be used to more accurately access specific smallmouth angling locations and enable the complete coverage of selected areas. Angling for smallmouth bass will be conducted primarily at dawn and dusk. Smallmouth bass will be sampled at the surface and near the bottom. Carp will be angled with dough-ball baited hooks. Once caught, fish will be handled using powder-free nitrile gloves, unhooked, and immediately placed into individual resealable bags. Each bag will be marked with the date, time, station number, fishing technique code, event number, and initials of the sampler. Bagged fish will then be placed in coolers with wet ice for transport to the LWG field laboratory for processing.

In the event that two boats from members of the Oregon Bass and Panfish Club[3] are deployed for angling for smallmouth bass, Integral scientists will be on board each boat to process the fish according to the Fish Sampling SOP and to record the GPS coordinates of the collection site.

4.6.1.6 Crayfish Traps

Standard collapsible minnow traps will be used for capturing crayfish. Bait will consist of commercially available frozen smelt and frozen shad. Frozen smelt or shad will be cut into small pieces and placed into perforated plastic canisters with screw-on plastic lids. Canisters will be attached to the inside of the traps using plastic zip ties. Crayfish traps will be deployed within 100 ft of the shoreline at marked sculpin stations. Sculpin stations will be marked in 100-ft widths along the shoreline. Depth of deployment will vary according to station bathymetry. Traps will be retrieved and carefully rinsed before being placed inside the boat.

Technicians wearing powder-free nitrile gloves will retrieve the crayfish from the traps and place them inside resealable plastic bags. Plastic bags containing crayfish will then be stored inside coolers with wet ice until ready for processing. Each bag will be

[3] Bill Egan, Oregon Bass and Panfish Club, PO Box 1021, Portland, OR 97207-1021, (503) 282-2852.

marked with the date, time, station number, fishing technique code, event number, and initials of the sampler.

4.6.1.7 Benthic Sledge

A benthic sledge will be used to collect clams (*Corbicula* sp.) in the Study Area. The benthic sledge consists of a metal frame approximately 20 cm high by 55 cm wide. A bag (approximately 50 cm by 50 cm) with a 1-mm or a 1.8-mm mesh is attached to the back of the frame and protected by heavy canvas cloth. Two V-shaped brackets are attached to the corners of the sledge and linked together by an 85-cm-long chain. A cable is attached to the center of the chain, and the sledge is pulled behind a boat. The cable will be adjusted so that it maintains a scope of approximately 1:4 (the scope is the ratio of the water depth to the length of rope let out [i.e., a 1:4 scope is 1-m water depth to 4 m of rope let out]). The scope may be adjusted depending on whether or how far the sledge digs into the sediment.

At the completion of the designated pulling time or horizontal distance dredged, the sledge will be slowly winched to the surface of the water, and the contents of the bag will be sieved outboard by moving the sledge back and forth through the water. When the contents have been sieved as much as possible in the bag, the sledge will be lifted on board, and the contents in the bag will be transferred into nested 2.0- and 1.0-mm sieves and the clams will be sorted from the sediment and debris.

4.6.2 Sediment Sample Collection

Collocated surface sediment samples will be collected after the sculpin, crayfish, and clam sampling effort has been completed at a given location, as described in Section 4.2.4. As in the Round 2 benthic tissue sampling effort (Windward and Integral 2006), the sediment sampling at each small-home-range-species sampling station will use a location-specific sampling approach, which will be based on the locations where the organisms were successfully collected.

Collocated sediment samples will be collected for all small-home-range species. Surface sediment grab samples for chemistry analyses will be collected using standard protocols and guidelines (USACE et al. 1998; PSEP 1986) as described in Appendix C. Sediment collection and compositing procedures are described below.

Prior to sampling, target station coordinates will be entered into the navigation system. Once the sampling equipment has been deployed, the actual position will be recorded when the equipment is on the riverbed. All samples will be collected within 5 m of the target sampling location, when possible.

Surface sediment samples will be collected with a stainless-steel, modified, 0.1-m^2 van Veen grab sampler. The van Veen grab will be attached to the winch cable with a ball-bearing swivel to prevent twisting movements during deployment. The device will be raised and lowered through the water column by the vessel's winch at a rate no greater

than 20 m/min. This will ensure that the sampler does not flip over on descent and will prevent disturbance of the sediment surface on retrieval.

Once the sampler is brought on board, it will be placed on the sieving stand. Access doors on the top of the sampler will allow visual characterization of the sediment surface in order to assess sample acceptability. Before characterization, the overlying water in the sampler will be removed by siphoning. Samples must meet the following acceptability criteria (PSEP 1986; USACE et al. 1998):

- Sediment is not to extrude from the upper surface of the sampler.
- No water leakage from the sampler is allowed.
- The sediment surface must be relatively flat.
- Minimum sediment penetration depth should not be less than 12 cm.

If these criteria are not met, sampling will continue until they are met.

Prior to removal of sediment for compositing, certain parameters and qualitative environmental observations will be recorded. The following physical characteristics of the sediment in each of the surface sediment grab samples will be described and recorded on field logs or sample description forms (Appendix A): sediment texture; sediment color; presence, type, and strength of odors; grab penetration depth (nearest 0.5 cm); degree of leakage or sediment surface disturbance; and any obvious abnormalities such as wood/shell fragments or large organisms.

Since an undisturbed sediment surface is necessary for chemical sampling, the physical characterization of the sediment in the grab sample will be delayed until after the chemical samples have been taken. Sediment for physical (e.g., grain size) and chemical analyses will be taken from top 10 cm using a stainless-steel spoon or spatula. Sediment that is in contact with the sides of the sampler will not be sampled. Large organisms and pieces of debris will be removed and noted in the sample log sheet. The sediment sample will then be placed into a stainless-steel mixing bowl for homogenization. Sediment from additional grabs will be added to the bowl as they are collected until all sediment has been collected for a given composite sample. The sediment in the bowl will be composited and homogenized prior to being placed in containers for analysis.

At approximately 5% of the stations, rinsate blanks will be prepared and submitted to the laboratory for analysis. Sediment samples will be stored on ice prior to delivery to the laboratory for analysis.

4.7 SAMPLE IDENTIFICATION

A unique identification code (ID) will be assigned to each sample as part of the data record. This code will indicate the project phase, sampling location, sample matrix,

sample compositing, level of replication/duplication, and matrix-specific sample information (i.e., tissue type for tissue samples).

Project Phase	Species Name	River Mile or Fishing Zone	River Bank	Composite	Replicate	Duplicate
'LW3-	*ss*	*rr (rrrr for carp only)*	*z- (does not apply to carp)*	*C or S*	*m*	*n*

Project Phase – All samples for LWG will be prefixed with LW. The following character will indicate the phase of sampling under which the sample was collected. For example, the Round 3 samples will start with LW3, followed by a dash.

Species Name – The species name is a two-character code that defines the type of organism sampled. The following code will be used to indicate the species being sampled:

- CA = clam
- CR = crayfish
- CP = carp
- SB = smallmouth bass
- SP = sculpin.

River Mile – Sampling locations will consist of two characters, *rr*, indicating the river mile (rounded down to the nearest whole mile) of the location.

The exception to this sampling location naming convention will be for sampling of whole segments of river for carp tissue. In those cases, the two characters for species name will be CP, for carp, followed by two digits for the lower river mile and another two digits for the upper river mile. For example, a sampling area for fish tissue from river mile 2 to river mile 5 would be named CP0205. Note that fishing zones for this Round 3B sampling event will be designated for collection of carp only.

Riverbank Location – Riverbank sampling locations will consist of one character, *z*, indicating the east or west side of the river.

Individual Specimen Numeration – At each sampling station, individual specimens will be numbered from 01 to 99, following the z riverbank location character and a dash.

These numbers will be retained in the database with the information for each individual specimen collected (e.g., weight and length). An example of a sample code for the third

smallmouth bass collected on the west side of RM 2 would be LW3-SB02W-03 and the first carp collected between RM 8 and 11 would be LW3-CP0811-01. Once a composite sample is assembled for a specific sampling station, these numbers will be dropped and a new composite number will be generated as the final sample identification code for chemical analysis.

Composite, Replication, and Duplication – A composite sample will be made according to the compositing scheme for each species as described in Table 2-1 and Section 4.9.4. Individual specimens will be randomly selected with the use of a table of random numbers for each sampling location. Once a sample composite is determined, a new sample identification code will be generated and written on a new label. That label will be placed inside the bag containing all specimens for that particular composite sample. The last three characters in the sample code will be used to indicate the level of compositing and duplication represented by the sample. These are separated from the location codes with a dash. The first character will be a "C" to indicate that the sample is a composite. An "S" will be used if only a single individual could be collected for a sample and this individual constitutes a sample. The second character will range from 0 (for a unique sample with no replication) to a maximum of 3 (to indicate which replicate a sample is in a series of replicates). The last character is used to indicate whether or not a sample represents a duplicate (i.e., a post-homogenization split). Use of a 0 indicates no duplication; a 1 or a 2 indicates which duplicate in the series a sample represents. These designations (i.e., 1 and 2) will be applied at the laboratory.

As an example of a single composite (no replication and no duplication), the sample ID for a sculpin from the east side of RM 8 would be LW3-SP08E-C00. Another example, for the second crayfish replicate composite sample (with no duplication) from the west side of RM 6 would be LW3-CR06W-C20.

Fish Fillet and Remaining Body Composites – Once smallmouth bass and carp are filleted, a new sample ID code is assigned to the newly generated samples. Fish fillet samples will receive an F, and the remaining body will receive a B at the very end of the sample ID code. For example, for the first carp collected from the RM 2 to RM 5 fishing zone, the fillet sample will be labeled LW3-CP0205-001F, and the remaining body sample will be labeled LW3-CP0205-001B.

When all fish for that particular sampling station are collected, individual fillet samples and remaining body samples will be selected to create composite samples, which will receive new sample IDs as described above. As an example for a single smallmouth bass fillet composite collected at the west bank of RM 5, the final sample ID would be LW3-SB05W-C00F.

Collocated Surface Sediment Samples - Collocated surface sediment samples for all sculpin, crayfish, and clam sampling stations will receive a G, for sediment grab, placed in front of the species name characters. For example, surface sediment collected for clams on the west side of RM 4 will be: LW3-GCA04W-C00.

All tissue and surface sediment sample identification codes and locations are listed in Table 2-1.

4.8 FIELD SAMPLE HANDLING AND STORAGE

Sample handling procedures and storage conditions are described below for fish and crayfish samples and for clam samples.

4.8.1 Fish and Crayfish Samples

In the field, fish and crayfish samples will be handled with powder-free nitrile gloves. All equipment will be decontaminated prior to processing samples at each new station and between different species (Section 3.5). Fish will first be measured for total length by placing them on a measuring board. The total length of a fish will be measured from the front of the jaw, which is most anterior to the end of the longest caudal ray when the rays are squeezed together, but excluding the caudal filaments, to the end of the tail. The total length of crayfish specimens will be measured from the rostrum, the flat "horn" between the crayfish's eyes, to the telson, the last center segment of the tail (Pennak 1989). The minimum length requirement for each species must be met before specimens are accepted for compositing. If the minimum length requirement is not met, the specimen will be returned to the river.

After length measurements, fish and crayfish will be roughly weighed using a handheld scale suited for the weight of the fish and crayfish (Pesola® 60 g x 0.5 g, and Pesola® 1,000 g x 10 g) to keep track of minimum weight requirements of composites for each species. Once weighed, the fish or crayfish sample will be wrapped in aluminum foil and placed inside a resealable plastic bag. A label will be written on Rite-in-the-Rain™ paper, placed inside another resealable plastic bag, and, in turn, placed inside the bag containing the fish sample. This is to ensure that no chemicals present in the treated label paper would contact the fish sample. All labels will be marked with the date, time, station number, fishing technique code, event number, number of electrofishing seconds, and initials of the sampler and the fish and crayfish samples will be placed in a cooler with ice.

At the end of each day, the cooler will be brought back to the LWG field laboratory. All fish and crayfish will then be removed from the cooler, counted, and stored in the 4°C refrigerator. The refrigerator will be in a secured locked area, and a total fish number will be entered in the LWG field laboratory storage logbook and signed. The fish samples will be processed by the field lab crew at the LWG field laboratory within 24 hours of sampling.

4.8.2 Clam Samples

At the completion of each tow for clams, the sledge will be lifted on board, and the contents in the bag will be transferred into nested 2.0- and 1.0-mm sieves. The nested sieves will facilitate sorting of clams from sediment and debris. The clams will be picked out, rinsed with site water, and placed in a clean glass jar. The soft tissue biomass of each clam will be estimated based on length (anterior to posterior) measurements and the equation in Figure 4-1. The length measurements and the estimated weights will be recorded on the field collection form (Appendix A). A minimum of 10 and a maximum of 15 tows will be performed at each location, or until an estimated minimum weight of 50 g has been obtained, whichever comes first. The clams from all tows at each location will be placed in a clean wide-mouth glass jar. All clams collected at each location will be retained for chemical analysis even if the target tissue mass is not obtained. If sufficient tissue mass is not available for the analysis of the full suite of target analytes, composite samples will be analyzed following the ranking scheme described in the Round 2 Sampling of Benthic Tissue Invertebrate Tissue FSP (Windward and Integral 2005).

A label will be placed on each jar with the date, time, station number, number of clams, initials of the sampler, and the jars will be placed in a cooler with ice. At the end of each day, the cooler will be brought back to the LWG field laboratory. All clam jars will then be removed from the cooler, counted, and stored in the freezer at -20°C. The freezer will be in a secured locked area, and the total number of clam samples will be entered in the LWG field laboratory storage logbook and signed. At the end of the field work, the clam samples will be shipped to the analytical laboratory for compositing.

4.9 FIELD LABORATORY SAMPLE HANDLING AND PROCESSING

4.9.1 Field Laboratory Location and Facilities

The LWG laboratory for fish processing is located at 1991 NW Upshur Street in Portland, OR. The laboratory has a "clean room" for fish processing that will be thoroughly cleaned before any sample processing occurs. The clean room has a positive pressure system to prevent outside dust particles from depositing onto fish samples during processing. The laboratory is also outfitted with a large supply of de-ionized water provided by Columbia Analytical Services, two sinks, and all laboratory safety equipment listed in the SOP.

4.9.2 Monitoring of Personnel in Laboratory

Upon entering the LWG field laboratory, all visitors and non-LWG personnel will be required to sign in with their name, date, time, and purpose on the sign-in sheet located at a table by the front door. The numbered sheets will be kept in a binder for a record of all entrances, and the originals will be stored in the LWG Project Library at Integral's office in Olympia, WA.

4.9.3 Laboratory Opening Procedures

Upon entering the laboratory, several tasks will be performed each day of fish processing:

1. The temperature in the freezers and refrigerators will be monitored daily for all units. Temperature readings will be noted in the refrigeration logbook with date and time. Any unit with a temperature reading out of compliance (+4°C ± 2°C for refrigerators or -20°C ± 4°C for freezers) will be adjusted and the adjustment noted in the logbook.
2. The digital balance will be calibrated with certified standard weights.
3. The number of fish in the refrigeration units will be compared to the number of fish logged in by the field crew in the chain-of-custody logbook after field processing. Any discrepancies will be immediately noted and the field manager contacted. Discrepancies will be resolved before samples are processed.
4. Printed scanned field notes by field crew will be reviewed prior to laboratory processing.
5. All working surfaces will be covered with aluminum foil, shiny side down, as per the SOP.

4.9.4 Fish and Invertebrate Processing Procedures

Procedures for processing fish and shellfish at the field laboratory are described in this section, including procedures for hook removal, weight and length determinations, health examination, filleting, and compositing.

Decontamination of field laboratory equipment and field laboratory fish handling will follow the instructions of the Fish Tissue Sampling SOP (Appendix B). All surfaces will be covered with clean aluminum foil with the dull side up prior to contact with fish samples.

4.9.4.1 Fish and Crayfish Processing

The processing of fish and crayfish will occur according to the following procedures:

- Any hooks present in the fish, due to being caught on a trotline, will be removed prior to weighing in the processing laboratory. Hook removal will be noted in the condition section of the laboratory notebook entry.
- Fish and crayfish will be weighed on a calibrated digital balance. Any fish that exceeds the capacity of the digital balance (3,000 g) will be weighed on a seed scale (Morris Scale Model 20, 20 lbs X 1 oz, temperature compensated), and the weights converted to metric. The accuracy of the seed scale will be tested with a NSTS weight. The weight will be noted in the laboratory processing form.
- Fish length will be measured on a measuring board covered with aluminum foil. The total length will be measured from the tip of the snout to the end of the

caudal fin, when compressed dorsal-ventrally. The length will be determined by marking the end of the tail with a sharp object and folding the aluminum foil at that point to read the ruler. Fork length will be measured from the tip of the snout to the fork of the caudal fin, with the fin extended. The length will be determined by marking the end of the tail with a sharp object and folding the aluminum foil at that point to read the ruler. For fish with a highly preyed upon or eroded caudal fin, the fork length measurement represents a best estimate of length.

- Crayfish length will be measured on a measuring board covered with aluminum foil. The total length will be measured from the rostrum, the flat "horn" between the crayfish's eyes, to the telson, the last center segment of the tail (Pennak 1989).
- Fish and crayfish will be examined for observable anomalies, using the Fish Health Examination Sheet (Appendix A) as a guide, and the condition will be noted in the laboratory notebook. Entries will be descriptive (e.g., 2-mm red spot on distal end of caudal fin ray 2).
- Each carp and smallmouth bass will be scaled and both fillets will be removed for separate analysis. This procedure will be completed by or under the direction of Mr. Kim Gould of SWCA Environmental Consultants[4] using procedures described in the SOP for preparation of fish fillets (Appendix B). Fillets will be collected with skin and belly flaps. The scales will be collected to the extent practical and added to the remaining body for each fish as described in the Fish Processing SOP in Appendix B. Fillets and remaining bodies will be processed and analyzed separately. A new sample identification code will be generated for fillets and for the remaining body samples. See Section 4.7 for more details on sample identification rules.
- Whole bodies of sculpin, fillets and remaining bodies of bass and carp, and crayfish will then be wrapped in clean aluminum foil, shiny side away from the fish, and put into an appropriately sized bag with the bagged sample label that was prepared by the field crew. The bag with fish and label will be sealed according to the Fish Tissue Sampling SOP.

4.9.4.2 Fish and Crayfish Compositing

The target number of individuals to be included in each composite sample for each type of fish is shown in Table 2-1. Individual specimens will be selected according to the composite scheme SOP (Appendix B) for each sampling location. The selected individuals will be labeled as described in Section 4.7 and provided to CAS for filleting (smallmouth bass and carp) and homogenization. The SOP for homogenization procedures, CAS SOP MET-TISP revision 5, will be provided in an appendix to the QAPP.

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[4] SWCA Environmental Consultants, 434 NW 6th Avenue, Suite 304, Portland, OR 97209, (503) 224-0333.

4.9.4.3 Clam Tissue

The clam tissue samples will not be processed in the field laboratory. The clam samples will be shipped frozen to CAS and the laboratory will shuck, composite, and homogenize the samples.

4.9.5 Sample Tracking Procedures

In order to keep track of each fish caught and retain the capability of quickly retrieving samples for compositing or for a possible corrective action, it is necessary to keep a detailed record of each fish as described below. The procedures below will be followed after each sample has been completely processed by the field lab crew.

- Each fish sample, after being sealed as per the Fish Tissue Sampling SOP, will be color-coded with colored duct tape to reflect its sampling area of origin.
- Each sample will be placed in a freezer unit, and the location (freezer unit number and shelf), date, time of storage and processor will be noted in the storage notebook (Appendix A). The data will then be transferred to a tracking spreadsheet (Appendix A).
- The sample storage log will be entered into the laboratory computer at the end of the day, and any samples moved or shipped will be updated in the tracking spreadsheet.

4.9.6 Corrective Actions

Any discrepancies or problems will be noted on a field protocol modification form (Appendix A), as well as the proposed and actual actions taken (forms will be stored in the LWG Project Library at Integral). The information will be given to the field manager who will approve the action. The form will then be signed by the laboratory personnel and the field manager. Examples of types of events that require a field protocol modification form are described below.

- Errors in reported measurements that were checked and corrected delay processing/extended hold times
- Any freezer unit with a temperature reading out of compliance (+4°C ± 2°C for refrigerators or -20°C ± 4°C for freezers).

Original and copies of all field protocol modification forms will be stored in the LWG Project Library at Integral's office in Olympia, WA.

4.9.7 Data Management

Field data will be logged in and transmitted to Integral on a daily basis as follows:

- At the end of each day, data from the sample processing forms will be entered into a master spreadsheet of fish measurement data (e.g., weight, fork length, total length). The updated master table will be proofed, corrected, if necessary, and e-mailed from the field laboratory to the database manager at Integral.
- All pages in the laboratory notebook will be scanned into the laboratory computer and e-mailed to Windward, Integral, and Kennedy/Jenks for review and offsite storage.
- The storage log will be entered and updated.
- Any field protocol modification forms will be scanned and e-mailed to Windward and Kennedy/Jenks.

4.9.8 Laboratory Closing Procedures

Before leaving the laboratory each work day, several tasks will be performed:

- Verify that all freezer and refrigerator units have been monitored.
- Verify that all freezers are locked.
- Decontaminate all used utensils and cutting boards.
- Clean all work surfaces.
- Scan and store laboratory notebook pages, e-mail data to Integral, Windward, and Kennedy/Jenks, and update the sample storage log as described in the previous section.

4.9.9 Shipping Composite Samples to Analytical Labs

Procedures for selecting individuals to include in composites are described in the Fish Tissue Compositing and Shipping SOP (Appendix B) and in Section 4.9.4.2. All sample handling and equipment preparation will follow the SOP including the following:

- Confirm that composite information was received from Windward or Kennedy/Jenks and added into the data master table by Integral.
- Coordinate staff and supplies, including dry ice arrangements.
- The sample storage log will be referenced by the field laboratory crew to aid in locating fish samples in the freezers.
- Fish from the appropriate species will be pulled from the freezers and sorted into "composite" and "archive" clean bins. Samples that will not be used will be returned to the freezer. Individual tissue samples will be grouped together into the appropriate composite and then double-checked by one person calling

out the fish ID and the other person checking off the fish sample ID on the composite list.

- Composited samples will then be bundled together into one appropriately sized bag, and a new label reflecting the composite code will be created (see Section 4.7). The label will be placed into a zippered plastic bag and included in the bag with the composited fish samples. The bag of composites will be sealed and returned to the freezer until ready to be placed into a cooler prepared with wet ice or dry ice for shipping.
- Coolers will be prepared for shipping and packed; two hazardous material placards with dry ice information will be attached to coolers carrying dry ice only, in addition to the placards noted in the Fish Tissue Compositing and Shipping SOP.
- Copies of all shipping forms will be made and stored at the LWG field lab and at Integral's office in Olympia, WA.
- The sample storage log will be updated to reflect the transfer of samples from the laboratory and the movement of samples for archiving.

4.10 FIELD QC SAMPLES

Field QC samples are used to assess sample variability (e.g., replicates), evaluate potential sources of contamination (e.g., rinsate, decontamination, and trip blanks), or confirm proper storage conditions (e.g., temperature blanks). The target frequency of field QC samples is provided in Table 4-3, and the estimated numbers of field and QC samples are listed in Table 4-4. Details on field replicate samples and field QC samples are described in the Round 2 QAPP Addendum 9 (Integral, in prep.).

Field QC samples to be collected for sediment include equipment rinsate blanks and field splits. Field duplicates will not be collected because the sediment samples will be composites representing several locations. For tissue samples, QC samples will be collected in connection with homogenization procedures at CAS. Equipment rinsate blanks will be collected from the grinder, bowls, and utensils used for homogenization, and split samples will be collected after homogenization and compositing are complete. Field and homogenization QC samples will be collected at a frequency 1 per 20 natural samples (5%).

5.0 REPORTING

5.1 LABORATORY CHEMICAL DATA

Every effort will be made to provide validated analytical laboratory data to EPA in an electronic format within 90 days of completion of sample compositing and homogenization. This schedule allows 30 days each for sample analysis, data validation, and preparation of the database. The schedule may not be met if laboratory data are provided more than 30 days after sample compositing and homogenization are complete..

5.2 ROUND 3B REPORTING

A field sampling report will be prepared and submitted to EPA within 60 days of completing the field sample collection effort described in this FSP. The field sampling report will summarize field sampling activities, including sampling locations (maps), requested sample analyses, sample collection methods, and any deviations from the FSP.

Round 3B fish and invertebrate tissue and collocated sediment chemistry results will be reported in tabular format in a data report that will be prepared after completion of the Round 3B sampling event. The Round 3B data report will be submitted to EPA within 60 days after submittal of final data in electronic format. The Round 3B fish and invertebrate tissue and collocated sediment information and data evaluation will also be included in draft RI report. The draft RI report will be prepared after all sampling and analysis rounds for the project are completed.

6.0 REFERENCES

Humphrey, C., and E. Blischke. 2007. Personal communication (letter of June 8, 2007, to Jim McKenna and Robert Wyatt, LWG, Portland, OR, regarding Round 3B Data Gaps). U.S. Environmental Protection Agency, Region 10, Portland, OR.

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SEA, Windward, Kennedy/Jenks, and Anchor. 2002. Portland Harbor RI/FS Field Sampling Plan. Prepared for the Lower Willamette Group, Portland, OR. Striplin Environmental Associates, Inc., Olympia, WA ; Windward Environmental LLC, Seattle, WA; Kennedy/Jenks Consultants, Portland, OR; and Anchor Environmental, LLC, Seattle, WA.

USACE, EPA, Ecology, DEQ, and WDNR. 1998. Dredged Material Evaluation Framework Guidance for the Lower Columbia River Management Area. Draft. Cooperatively published by U.S. Army Corps of Engineers, Seattle District, Portland District, Northwestern Division; U.S. Environmental Protection Agency, Region 10; Washington State Department of Ecology; Oregon Department of Environmental Quality; and Washington State Department of Natural Resources, Seattle, WA.

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LAW #1603755

SITE ACCESS AGREEMENT

This Agreement is made this 4th day of ~~September~~ October, 2007, between the Lower Willamette Group ("LWG") and Cargill Inc.

RECITALS

A. Cargill Inc. owns real property, and CDI Grain leases said property, located at 800 N River Street, Portland, Oregon (the "Property").

B. LWG members have signed an Administrative Order on Consent ("AOC") with the federal Environmental Protection Agency ("EPA") to complete a Remedial Investigation and Feasibility Study ("RI/FS") of the Portland Harbor Superfund Site (the "Site"). The Property is within the Site.

C. The approved RI/FS Programmatic Work Plan (the "Work Plan") require the LWG to complete outfall verification of outfalls WR-348 and WR-349 located on the Property. The verification work includes performing visual observation at the identified outfalls and recording on standardized log sheets attribute data (including status (i.e. active or inactive), pipe size and composition), recording of GPS coordinates for such outfall, and photographing each outfall. In order to complete this work, the LWG and its consultants and contractors and EPA, EPA's contractors and oversight officials, the Oregon Department of Environmental Quality (DEQ) and its contractors, and the designated representatives of Tribes and Natural Resource Trustees accompanied by EPA (collectively, "the Access Grantees") require access to the Property.

AGREEMENT

NOW, THEREFORE, in consideration of the mutual covenants and agreements contained herein, the parties do hereby covenant and agree to and with each other as follows:

1. Subject to the provisions of this Agreement, Cargill Inc. grants permission to the Access Grantees to enter the Property to perform or oversee the work described in Recital C (the "Work"). Access granted under this Agreement to the Access Grantees shall be for the sole purpose of undertaking or overseeing the Work.

2. The LWG shall perform the Work in a manner that minimizes interference with the use or enjoyment of the Property by Cargill Inc. to the greatest extent reasonably possible. The LWG shall not cause or permit the Work to be performed in a manner that would cause or exacerbate any contamination at the Property.

3. The LWG agrees not to permit any liens to stand against the Property for work done or materials furnished to the LWG.

4. The LWG shall not cause or permit the Work to be performed in a manner that would cause damage to the Property which cannot be remedied and restored before, or promptly after, the completion of the Work.

5. As soon as it is reasonably possible, the LWG shall restore the affected portion of the Property to its condition before the Work commenced. The LWG shall promptly and properly dispose of all waste generated during the Work.

6. Cargill Inc. has the right to be present during any Work at the Property. The LWG will provide Cargill Inc. a minimum of 24 hours' notice before beginning any Work at the Property.

7. The Work and access to the Property under this Agreement shall comply with all federal, state, and local statutes, rules and regulations and the AOC.

8. The LWG shall be responsible for the safety of any person who enters the Property with respect to conditions created by the LWG while performing the Work.

9. The LWG, to the extent allowed under Oregon law, shall indemnify, defend, and hold Cargill Inc. harmless from and against any and all claims, demands, fines, damages, obligations, and liabilities in connection with any claim to the extent such claim arises directly from the negligence of the LWG in performing the Work under this Agreement. This indemnification shall be subject to applicable limitations of the Oregon Constitution and the Oregon Tort Claims Act for any local government established under Oregon law.

10. Nothing in this Agreement shall give rise to any liability or obligation by the LWG, any LWG member, or any LWG consultant or contractor with respect to any pre-existing contamination at the Property, whether known or unknown.

11. Neither the LWG nor any LWG member is EPA's, DEQ's, Tribes' or Natural Resource Trustees' representative with respect to liability associated with Site activities.

12. The rights of the parties under this Agreement shall be governed by the law of the state of Oregon.

13. This Agreement shall be effective through November 30, 2007, unless extended in writing by the parties.

14. The provisions of this Agreement shall extend to, bind, and inure to the benefit of the parties hereto and their respective successors and assigns.

IN WITNESS WHEREOF, the parties hereto are authorized to have executed this Agreement and agree to be bound by the terms herein.

LOWER WILLAMETTE GROUP

By: James McKenna

Its: LWG Co-Chair

CARGILL INC

By: Robert Taylor DDK

Its: Port Terminal Operations Leader

LAW #1652138

Ash Creek Associates, Inc.
Environmental and Geotechnical Consultants

Memorandum

Date: October 9, 2007

To: Nicole LaFranchise, Port of Portland

From: Amanda Spencer, R.G., P.E.

cc: Andy Koulermos, Newfields

Re: Modifications to Storm Water Sampling Program/Recontamination Analysis for
Fall 2007 Program
Terminal 4, Port of Portland
Portland, Oregon
Ash Creek Associates Project No. 1267

A storm water characterization is being conducted at Terminal 4 (the Facility) to evaluate whether storm water may be a potential source of future adverse impact to the Willamette River. The storm water characterization program was initiated in December 2006 and it was recently determined that it would be beneficial to extend the program through fall 2007. This memorandum summarizes the scope of work for the fall 2007 program and describes modifications that will be incorporated into the program.

The storm water evaluation is being conducted as required by the Oregon Department of Environmental Quality (DEQ), pursuant to the following:

- Terminal 4 Slip 1 Upland Facility – Voluntary Agreement for Remedial Investigation, Source Control Measures, and Feasibility Study (DEQ No. LQVC-NWR-03-18), December 4, 2003.
- Terminal 4 Slip 3 Upland Facility – Consent Judgment No. 0410-10234, Multnomah Circuit Court, October 7, 2004, Section 3.C.

In addition, the Port of Portland (Port) is conducting a CERCLA Removal Action for the Terminal 4 Removal Action Area sediments pursuant to an Administrative Order on Consent (Order) with the U.S. Environmental Protection Agency (EPA; CERCLA 10-2004-0009, executed by the Port and EPA in October 2003). As part of the Removal Action, the Port is conducting an evaluation of the potential for current upland and upstream sources–including storm water–to recontaminate the Terminal 4 Removal Action Area sediments. The scope of work and methodology for the storm water characterization program and the recontamination analysis are described, respectively, in:

- *Storm Water Evaluation Work Plan, Terminal 4 Slip 1 and Terminal 4 Slip 3*, dated June 2007 and prepared by Ash Creek Associates (referred to herein as the "SWEWP"); and

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- *DRAFT Report: Appendix N - Terminal 4 Recontamination Analysis*, dated November 2006 and prepared by Blasland, Bouck & Lee (BBL; referred to herein as the "Draft Recontamination Analysis Report").

Section 6 of the Draft Recontamination Analysis Report provided the methodology for the storm water and solids sampling and analysis program. The EPA commented on Section 6 of the Draft Recontamination Analysis Report in November 2006. Responses to EPA comments on Section 6 were summarized in a table (dated November 29, 2006) submitted to the EPA to provide further clarification on procedures to be used in the storm water characterization program. DEQ approved the methodology and scope of work for the storm water characterization program in a letter to the Port dated April 26, 2007.

Background

The Facility comprises approximately 283 acres on the east bank of the lower Willamette River and is downstream from the St. Johns Bridge in north Portland, Oregon between River Miles 4.1 and 4.6. The portions of the Facility identified as the Slip 1 and Slip 3 Upland Facilities are approximately 98 acres and 23 acres in area, respectively. Figures 1 and 2 show the vicinity and layout of the Facilities.

The topography of the Facilities is relatively flat, with an elevation of approximately 30 feet above mean sea level (MSL). The ground surface of the Facilities is predominantly paved with asphalt or concrete, with unpaved areas of generally gravel or grass. No surface water bodies are located on the Facilities, but each is located adjacent to the Willamette River.

Figure 3 shows the storm water conveyance system at the Facility. As shown on the Figure, there are also two City of Portland (City) outfalls (OF-53 and OF-52C) that discharge off of the Facility. The drainage basins that were selected for storm water and/or solids sampling are:

Media	Basin or Outfall
Storm Water	D, L, M, Q, R, OF-52C, OF-53
Storm Water Solids	D, L, M, R, OF-52C, OF-53

The rationale for the selection of these basins for the sampling and analysis program is provided in a February 26, 2007 memorandum from Ash Creek Associates to the Port. The methodology being employed to collect storm water and storm water solids samples for analysis is detailed in the SWEWP and Section 6 of the Draft Recontamination Analysis Report, and is summarized below for reference.

Solids Sampling. Storm water solids sampling is performed using sediment traps installed in manholes within the conveyance line of each of the basins to be sampled. The sediment traps hold three to four 1-liter sample bottles at the base of the manhole. The sediment traps are inspected monthly to assess the condition of the sample bottles and to evaluate the volume of sediment accumulated to date.

Bulk Storm Water Sampling. The bulk storm water samples are collected as flow- and/or time-weighted composite samples, which are comprised of a number of discrete individual samples of specific volumes taken at flow- and/or time-weighted intervals. An automatic composite sampler (i.e., an ISCO sampler) is set up with an area velocity flow meter that activates the sampling when there is storm flow in the pipe. The ISCO samplers employed at the Facility use four 1-gallon bottles. The samplers are programmed to fill individual 1-gallon bottles one at a time throughout the programmed storm duration (e.g., a 24-hour storm event period). The collected storm water from the four 1-gallon bottles is composited into one bulk sample and samples for chemical analysis are split from that composite.

Objectives and Scope of Work for Fall 2007 Sampling Program

The original scope of the storm water and solids sampling program, detailed in the SWEWP and the Draft Recontamination Analysis Report, was to be completed by June 30, 2007. However, while implementing the winter/spring 2007 program, it became apparent that continuing the program through fall 2007 would be advantageous for the following reasons:

- Solids accumulation in two of the six basins (Basins D and R) was insufficient to complete all of the proposed analyses; and
- The addition of seasonal first-flush storm water sampling would provide needed supplementary information to assist not only in the recontamination analysis for the Facility, but also in data evaluation for the storm water program being conducted by the Lower Willamette Group (LWG) in the Portland Harbor Superfund Site (PHSS) study area.

Therefore, the scope of work for fall 2007 is:

- Solids sampling: Re-deploy sediment traps in Basins D, L, M, R, OF-52C, and OF-53. Solids accumulated during the winter/spring 2007 program were submitted to the analytical laboratory to be preserved via freezing and stored for later analysis. Protocols for solids freezing are consistent with those being used by the LWG in its storm water program. The solids that accumulate in the traps deployed in fall 2007 will be added to those previously collected during the winter/spring 2007 program and analyzed as one bulk sample from each sampled basin representative of a complete rain season. The analysis program will be as described in the Draft Recontamination Analysis Report and SWEWP.
- Storm Water Sampling: The bulk storm water samplers will be re-deployed at the basins selected for storm water sampling (Basins D, L, M, Q, R, OF-52C, and OF-53) for the collection of seasonal first-flush storm water samples (i.e., one event will be sampled at each location). The samplers at Basins D, L, M, and Q, will be re-deployed by the third week of September 2007. The sampler in Basin R was deployed following routine Port maintenance on the line during the first week of October 2007. The samplers for the City outfalls (OF-52C and OF-53) were re-deployed in early October 2007, following completion of routine City maintenance work on their storm water conveyance lines that involved non-storm discharges. The analytical program for the fall 2007 storm water samples is listed in Table 1.

Modifications to Procedures Based on Winter/Spring 2007 Program

Base on the results of the winter/spring 2007 field program, two modifications will be made to the approach for the storm water and solids sampling to be conducted in the. They are:

1. Modification for Storm Water Sampling: As anticipated in preparing for the field program in winter/ spring 2007, the first qualifying storm event was needed to calibrate the flow and velocity measurement of the ISCO samplers. This calibration was needed for each sampler to enable the collection of a flow-weighted sample across the initial 24-hour duration of a storm event. This calibration may need to be repeated each time a sampler is removed from and re-installed into a storm water conveyance system. The fall 2007 program needs to be modified from this approach so that the first significant storm of the season can be sampled (and is not used to re-calibrate the ISCO samplers). Therefore, to alleviate the dependence upon the flow and velocity measurements, time-weighted samples will be collected over the first 24 hours of the qualifying storm event. The flow and precipitation charts will then be reviewed and the flow element will be incorporated in the compositing process to create flow-weighted samples. The following steps will be conducted to allow the manual estimation/incorporation of flow-weighting:

a) The samplers will be programmed to fill 12 1-gallon bottles over the 24-hour period on a timed basis (i.e., each bottle will fill over a 2-hour period of the storm event for a total of 12 individual time intervals);

b) The flow and precipitation data will be reviewed to determine the relative volumes of flow that occurred during each of the 12 time intervals during the 24-hour period. Each time interval (as represented by a 1-gallon sample bottle) will then be assigned a percent value of the total volume of the storm flow that occurred over the 24-hour sampling period; and

c) The laboratory has stated that they require a minimum of 3 gallons to complete both the desired analyses and the quality assurance assessment, and that 4 gallons is the preferred volume. Therefore, the laboratory will be instructed to composite a 4-gallon bulk sample from the 12 1-gallon sample bottles based on the relative volume of flow that occurred during each 2-hour period. For example, if 10 percent of the flow occurred during the time interval that Bottle 1 filled, then the volume of water contributed from Bottle 1 to the 4-gallon bulk sample will be 0.10 x 4 gallons = 0.4 gallons. It is recognized that the limiting factor of this approach is that no more than 25 percent of the flow can occur in one 2-hour period to achieve a bulk sample that is both accurately time- and flow-weighted. If more than 25 percent of the 24-hour total flow volume occurs in one 2-hour period, then either a smaller or larger volume bulk sample may be needed to represent the flow-weighting as accurately as possible.

2. Modification to the Sediment Trap Sampler - Basin R Only: Little to no accumulation occurred in the sediment trap deployed in Basin R. The manhole containing the sediment trap does not have a depression at the base to allow the sediment trap and sample bottles to be deployed below the elevation of the inlet and outlet pipes. The current sediment traps hold 8-inch-tall sample bottles and the flow through the manhole must be at least this high to allow accumulation to occur. However, it was observed that when the flow achieves this height, the velocity is too high to allow sediment to settle out of the storm water and to accumulate in the bottles. Therefore, a new sediment trap design will be employed. The new trap will hold a 2-inch PVC cylinder in place horizontally at the bottom of the manhole. The cylinder is placed perpendicular to flow, is capped at both ends, and will have a single 1/16-inch slot along its top to allow the storm water entry and exit. This design is similar to that described by the Washington Department of Ecology (Ecology Report #95-309) and may allow better accumulation with the type of manhole construction that is present at Basin R.

   No modifications are proposed for Basin D because it is anticipated that sufficient accumulation will be achieved with the extended deployment period. Similarly, no modifications are proposed for Basins L and M, or the City outfalls, because the winter/spring 2007 results demonstrated that the current configurations will successfully accumulate storm water solids into the sample bottles.

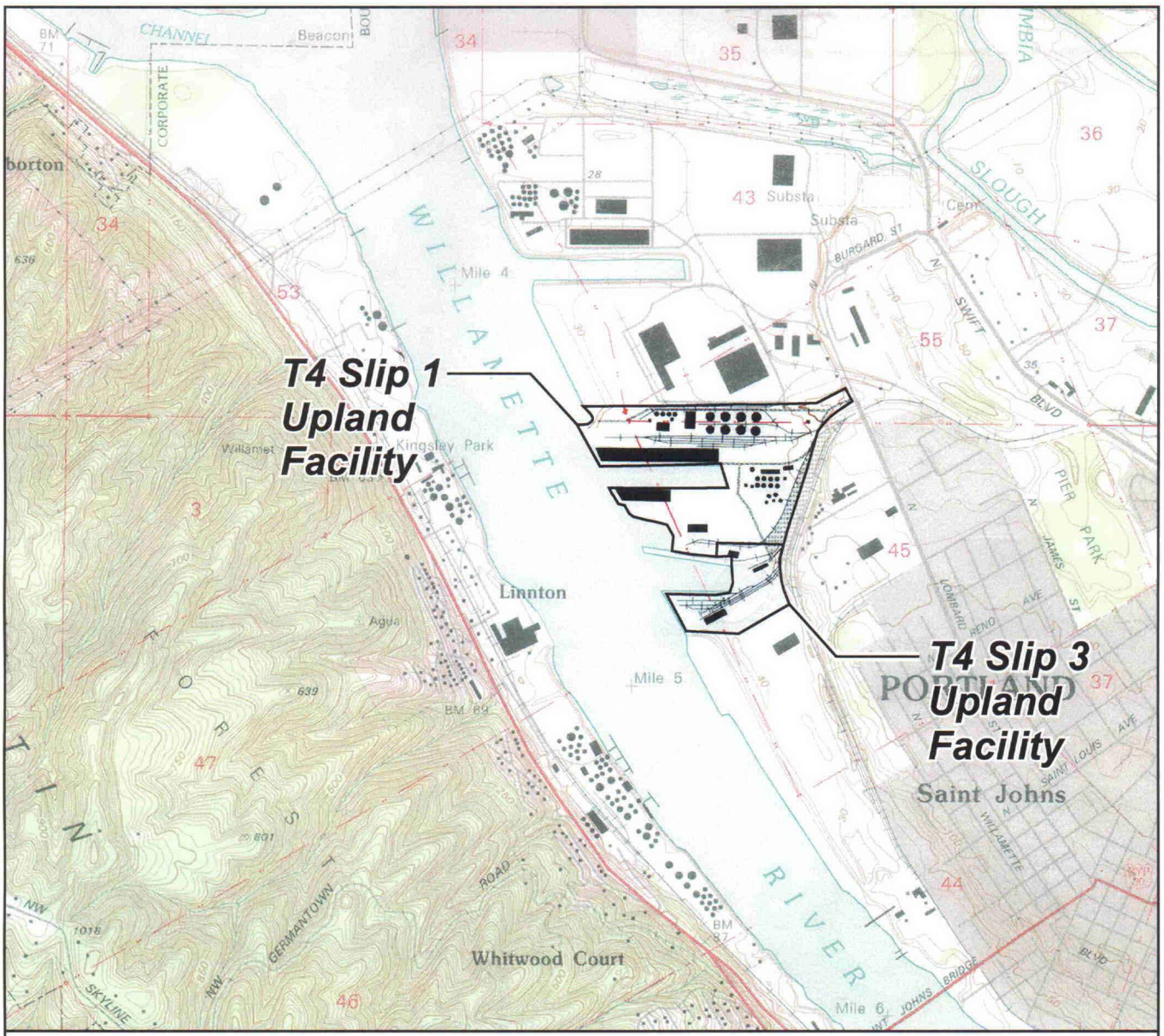
Attachments:

Table 1 – Analyses for Fall 2007 Bulk Storm Water Samples

Figure 1 – Facility Location Map
Figure 2 – Facility Plan
Figure 3 – Storm Drain System and Drainage Basins

Table 1 - Analyses for Fall 2007 Bulk Storm Water Samples
Terminal 4, Port of Portland
Portland, Oregon

Analyte Suite	Analysis Method	Basins or Outfalls
Total Suspended Solids (TSS)	EPA 160.1	D, L, M, Q, R, Outfalls 52C and 53
Total Organic Carbon (TOC)	EPA 415.1	D, L, M, Q, R, Outfalls 52C and 53
Dissolved Organic Carbon (DOC)	EPQ 415.1	D, L, M, Q, R, Outfalls 52C and 53
Total Polynuclear Aromatic Hydrocarbons	EPA 8270C SIM	D, L, M, Q, R, Outfalls 52C and 53
Dissolved Polynuclear Aromatic Hydrocarbons	EPA 8270C SIM	Q
Total Metals (As, Al, Ag, Cd, Cr, Cu, Ni, Pb, Sb, Se, Zn)	EPA 6020	D, L, M, Q, R, Outfalls 52C and 53
Total Mercury	EPA 7471A	D, L, M, Q, R, Outfalls 52C and 53
Dissolved Metals (As, Al, Ag, Cd, Cr, Cu, Ni, Pb, Sb, Se, Zn)	EPA 6020	D, L, M, Q, R, Outfalls 52C and 53
Dissolved Mercury	EPA 7471A	D, L, M, Q, R, Outfalls 52C and 53
Total Phthalates	EPA 525.2	D, L, M, Q, R, Outfalls 52C and 53
Dissolved Phthalates	EPA 525.2	Q
Total Polychlorinated Biphenyls - Aroclors	EPA 8082	L, M, Q, R, Outfalls 52C and 53
Dissolved Polychlorinated Biphenyls - Aroclors	EPA 8082	Q
Total Polychlorinated Biphenyls - Congeners	EPA 1668A	L, M, Q, R, Outfalls 52C and 53
Dissolved Polychlorinated Biphenyls - Congeners	EPA 1668A	Q
Total Petroleum Hydrocarbons	EPA 1664	D, L, M, Q, R, Outfalls 52C and 53
Total DDT Compounds	EPA 8081A	L, M, Q, Outfalls 52C and 53
Dissolved DDT Compounds	EPA 8081A	Q
Turbidity	EPA 180.1	D, L, M, Q, R, Outfalls 52C and 53



Base map prepared from the USGS 7.5-minute quadrangle of Linnton, Oregon, dated 1990.

N

0 2000 4000

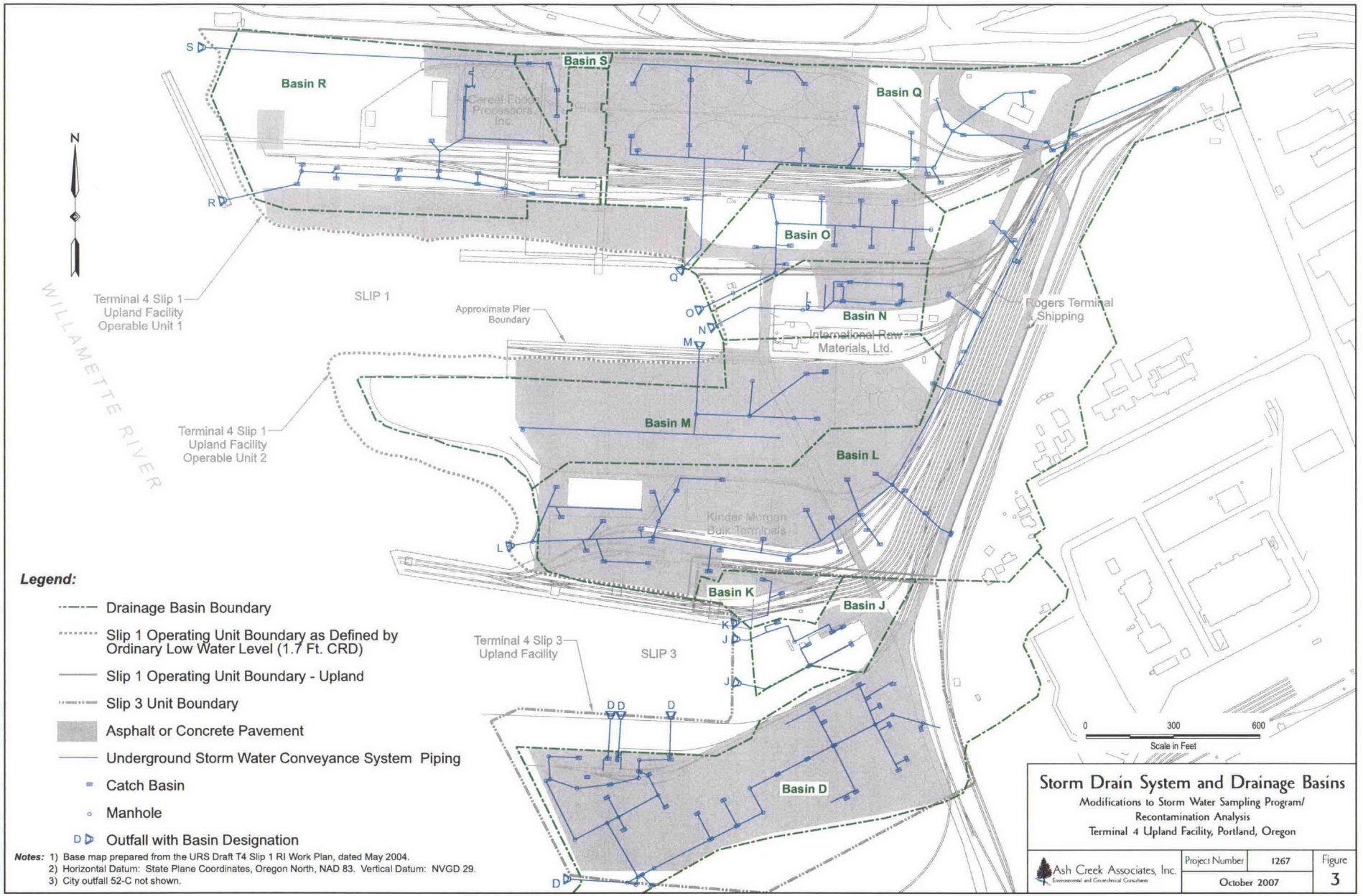
Scale in Feet

Facility Location Map

Modifications to Storm Water Sampling Program/
Recontamination Analysis
Terminal 4 Upland Facility, Portland, Oregon

Ash Creek Associates, Inc. Environmental and Geotechnical Consultants	Project Number 1267	Figure 1
	October 2007	

CARG001347



Legend:

- Drainage Basin Boundary
- Slip 1 Operating Unit Boundary as Defined by Ordinary Low Water Level (1.7 Ft. CRD)
- Slip 1 Operating Unit Boundary - Upland
- Slip 3 Unit Boundary
- Asphalt or Concrete Pavement
- Underground Storm Water Conveyance System Piping
- Catch Basin
- Manhole
- D Outfall with Basin Designation

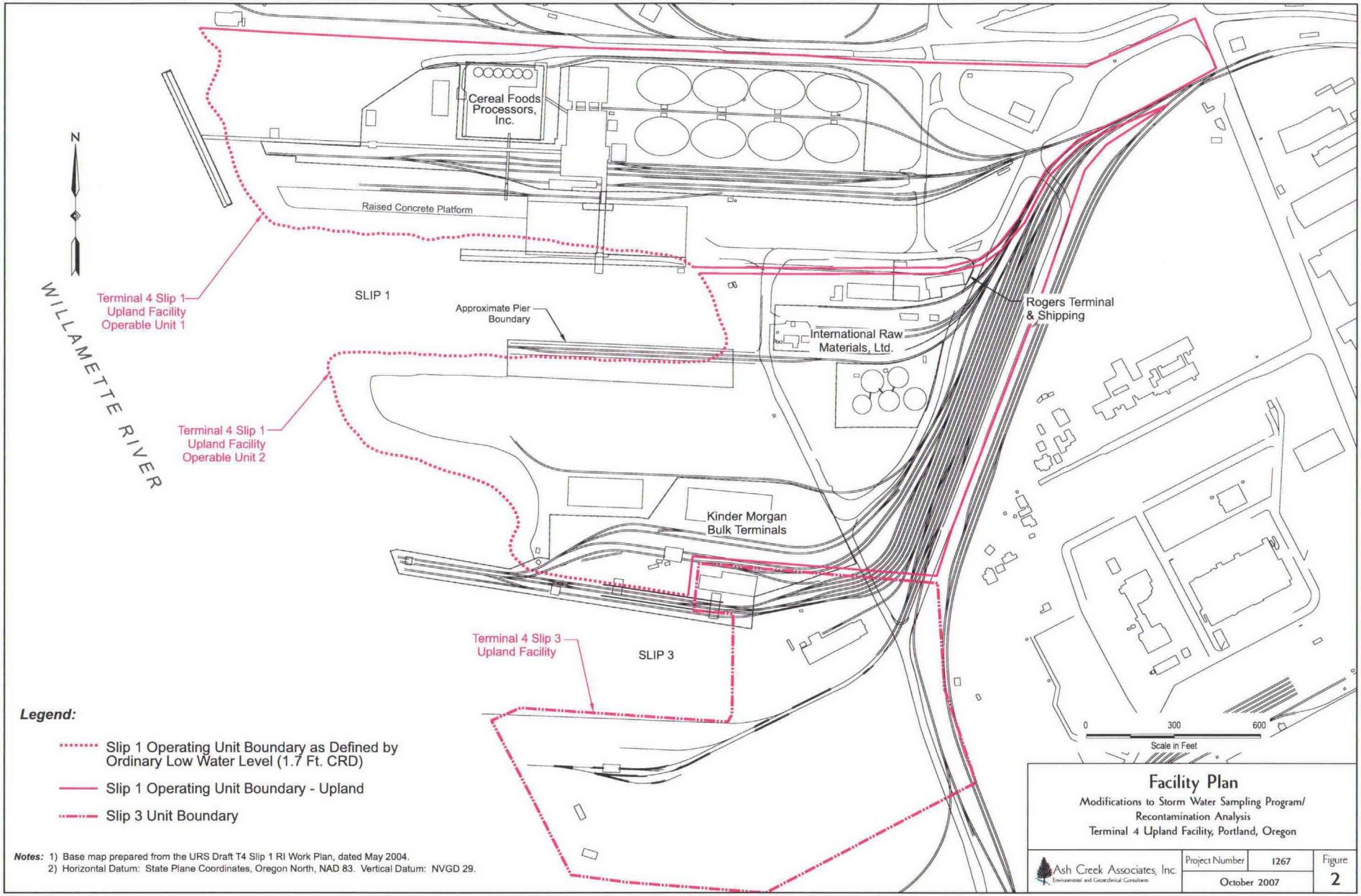
Notes: 1) Base map prepared from the URS Draft T4 Slip 1 RI Work Plan, dated May 2004.
2) Horizontal Datum: State Plane Coordinates, Oregon North, NAD 83. Vertical Datum: NVGD 29.
3) City outfall 52-C not shown.

Storm Drain System and Drainage Basins

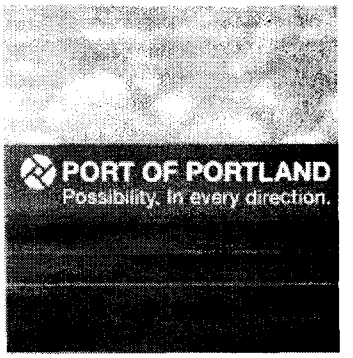
Modifications to Storm Water Sampling Program/
Recontamination Analysis
Terminal 4 Upland Facility, Portland, Oregon

Ash Creek Associates, Inc. Environmental and Geotechnical Consultants	Project Number 1267	Figure 3
	October 2007	

CARG001348


N
WILLAMETTE RIVER
Cereal Foods Processors, Inc.
Raised Concrete Platform
Terminal 4 Slip 1 Upland Facility Operable Unit 1
SLIP 1
Approximate Pier Boundary
International Raw Materials, Ltd.
Rogers Terminal & Shipping
Terminal 4 Slip 1 Upland Facility Operable Unit 2
Kinder Morgan Bulk Terminals
Terminal 4 Slip 3 Upland Facility
SLIP 3
Legend:
Slip 1 Operating Unit Boundary as Defined by Ordinary Low Water Level (1.7 Ft. CRD)
Slip 1 Operating Unit Boundary - Upland
Slip 3 Unit Boundary
Notes: 1) Base map prepared from the URS Draft T4 Slip 1 RI Work Plan, dated May 2004.
2) Horizontal Datum: State Plane Coordinates, Oregon North, NAD 83. Vertical Datum: NVGD 29.
0
300
600
Scale in Feet
Facility Plan
Modifications to Storm Water Sampling Program/ Recontamination Analysis
Terminal 4 Upland Facility, Portland, Oregon
Ash Creek Associates, Inc.
Environmental and Geotechnical Consultants
Project Number
1267
October 2007
Figure
2

CARG001349



121 NW Everett Portland OR 97209
Box 3529 Portland OR 97208
503 944 7000

October 11, 2007

Ms. Kristine Koch
US Environmental Protection Agency, Region 10
1200 Sixth Avenue, Suite 900
M/S ECL-115
Seattle, WA 98101-3140

Subject: **Modifications to Storm Water Sampling Program for Fall 2007**
Terminal 4

Dear Ms. Koch:

As discussed in our telecom on August 17, 2007, please find enclosed two copies of a memo from Ash Creek Associates regarding modifications to the storm water sampling program for fall 2007 for the Port of Portland (Port) Terminal 4 facility.

Please call me at (503) 944-7323 if you have any questions.

Sincerely,

Nicole LaFranchise
Environmental Project Manager

Enclosure

c: Tom Gainer, DEQ
Dennis Klein, Cargill Inc. (w/o enclosure)
Kimberly Thorstad, Cargill Inc. (w/o enclosure)
Gene Loffler, CLD Pacific Grain LLC (w/o enclosure)
Arnie Schaufler, CLD Pacific Grain LLC (w/o enclosure)
David Ashton, Port (w/o enclosure)
Suzanne Barthelmess, Port (w/o enclosure)
David Breen, Port (w/o enclosure)
Krista Koehl, Port (w/o enclosure)
Anne Summers, Port (w/o enclosure)
Amanda Spencer, Ash Creek Associates (w/o enclosure)
Andy Koulermos, NewFields (w/o enclosure)
LWP File

LAW #2005167

PORT OF PORTLAND
Box 3529, Portland, Oregon 97208

LEGAL DEPARTMENT

DATE:

☐ FAX - Original: ☐ will follow ☐ will not follow
☐ Mail ☐ Hand Deliver

Total number of pages, including this transmittal letter, is: **70**

To:

GENE LOFFLER
CLD PACIFICGRAIN LLC
503.243.5079

From:

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Subject:

INFORMATION FOR ESA AT TERMINAL 4 LEASHOLD

☐ For review ☐ For action ☐ For approval ☐ For signature
☐ As requested ☐ For information ☐ Please discuss ☐ For comment

Remarks:

11/24

Dennis Klein

Tried to e-mail. File was too big. Gene

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DOCUMENT1

Sam
• rec'd mov
• haven't had time to review

PORT OF PORTLAND

November 24, 2003

Ms. Jenifur Rancourt
Staff Scientist
ATC Associates
11825 SW Greenburg Road. Suite 2B,
Tigard, OR 97223

VIA EMAIL AND FACSIMILE

RE: Request for Information for Environmental Site Assessment at Terminal 4 Leasehold

Dear Ms. Rancourt:

This letter is pursuant to your request for documentation to support the required Environmental Site Assessment being conducted as part of the exit audit at the CLD Pacific Grain/Cargill property located at the Port of Portland – Terminal 4 in Portland, Oregon.

As you are aware, the Cargill leasehold is included within and adjacent to the Portland Harbor Superfund Site listed by the United States Environmental Protection Agency (US EPA) on the National Priorities List in December 2002. The Cargill leasehold is being targeted by Oregon Department of Environmental Quality ("DEQ") alongside other Slip 1 upland areas as a high priority area for further environmental investigation and potential cleanup.

To supplement the data we have already provided, please find attached the executed Administrative Order on Consent (AOC) for Removal Action at Terminal 4 dated October 2, 2003, and appendices. Please incorporate this additional information in your exit audit of the Cargill facility.

Please contact me if you have further questions or requests regarding the CLD Pacific Grain/Cargill property to properly perform the Environmental Site Assessment as part of the exit audit.

Sincerely,

Eric Schwamberger
Environment & Safety Manager
Marine Division
Port of Portland

cc: Gene Loffler, Cargill
Arnie Schaufler, Cargill
Bob Moulton, Port of Portland
David Ashton, Port of Portland
Juli Kilgore, Port of Portland
Anne Summers, Port of Portland

TABLE OF CONTENTS

APPENDIX LIST

2003-256

UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
REGION X

IN THE MATTER OF:	)	ADMINISTRATIVE ORDER ON CONSENT FOR REMOVAL ACTION
Portland Harbor Superfund Site, Terminal 4 Removal Action Area Portland, Oregon	)	U.S. EPA Region X CERCLA Docket No. CERCLA 10-2004-0009
PORT OF PORTLAND Respondent	)	Proceeding Under Sections 104, 106(a), 107 and 122 of the Comprehensive Environmental Response, Compensation, and Liability Act, as amended, 42 U.S.C. §§ 9604, 9606(a), 9607 and 9622.

I. JURISDICTION AND GENERAL PROVISIONS

1. This Administrative Order on Consent (Order) is entered into voluntarily by the United States Environmental Protection Agency, Region X (EPA) and the Port of Portland (Port) (Respondent). This Order provides for the performance of a non-time-critical removal action by Respondent at the Terminal 4 Removal Action Area (defined below) within the Portland Harbor Superfund Site (Site) located in Portland, Oregon, and the reimbursement of response costs incurred by the United States at or in connection with such action.

2. This Order is issued under the authority vested in the President of the United States by Sections 104, 106(a), 107 and 122 of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, (CERCLA), 42 U.S.C. §§ 9604, 9606(a), 9607 and 9622, Section 311(e) of the Federal Water Pollution Control Act, as amended (CWA), 33 U.S.C. § 1321(e), and the Oil Pollution Act of 1990, as amended (OPA), 33 U.S.C. § 2701 *et seq.*.

3. EPA has notified the State of Oregon Department of Environmental Quality (DEQ) of this action pursuant to Section 106(a) of CERCLA, 42 U.S.C. § 9606(a).

4. EPA and Respondent recognize that this Order has been negotiated in good faith and that the actions undertaken by Respondent in accordance with this Order do not constitute an admission of any liability. Respondent does not admit, and retains the right to controvert in any subsequent proceedings other than proceedings to implement or enforce this Order, the validity of the findings of facts, conclusions of law, and determinations in Sections IV and V of this

Order. Respondent agrees to comply with and be bound by the terms of this Order and further agrees that it will not contest the basis or validity of this Order or its terms. Respondent agrees to undertake all actions required by this Order, including any modifications thereto, and consents to and will not contest EPA's authority to issue or to enforce this Order.

5. The Confederated Tribes and Bands of the Yakama Nation; The Confederated Tribes of the Grand Ronde Community of Oregon; The Confederated Tribes of Siletz Indians; The Confederated Tribes of the Umatilla Indian Reservation; The Confederated Tribes of the Warm Springs Reservation of Oregon; The Nez Perce Tribe (the Tribal Governments) have treaty-reserved rights and resources and other rights, interests, or resources in the Site. The National Oceanic and Atmospheric Administration; The United States Department of the Interior and the Oregon Department of Fish & Wildlife and the Tribal Governments are designated Natural Resource Trustees overseeing the assessment of natural resource damages at the Site. To the extent practicable, and if consistent with the objectives of the removal action, the Work under this Order will be conducted so as to be coordinated with any natural resource damage assessment and restoration of the Site. The Tribal Governments and the federal and state Natural Resource Trustees will be provided an opportunity to review and comment on plans, reports, and other deliverables submitted by Respondent to EPA under this Order.

6. EPA and DEQ have entered into a Memorandum of Understanding for the Site (MOU) under which EPA and DEQ have agreed to share responsibility for investigation and cleanup of the Site. DEQ is the lead agency for conducting upland work necessary for source control, and EPA is the Support Agency for that work. EPA is lead agency for conducting in-water work,

including coordination of EPA's lead work with DEQ's source identification and source control activities. DEQ is the Support Agency for EPA's in-water work. DEQ will be provided an opportunity to review and comment on plans, reports, and other deliverables that Respondent submits to EPA under this Order. As lead agency, EPA will determine when sources have been controlled sufficiently for the selected removal action to be implemented under this Order.

7. To the extent practicable and consistent with the objectives of this removal action, the Work under this Order will be coordinated with work implemented under the Administrative Order on Consent for Remedial Investigation and Feasibility Study of the Site, dated September 28, 2001, Docket No. CERCLA-10-2001-0240.

II. PARTIES BOUND

8. This Order applies to and is binding upon EPA and upon Respondent and its successors and assigns. Any change in ownership or status of Respondent including, but not limited to, any transfer of assets or real or personal property shall not alter such Respondent's responsibilities under this Order.

9. Respondent shall ensure that its contractors, subcontractors, and representatives performing Work under this Order receive a copy of this Order within 14 days from the Effective Date or within 7 days of their contract to work on the project, and that they comply with this Order. Respondent shall be responsible for any noncompliance with this Order.

III. DEFINITIONS

10. Unless otherwise expressly provided herein, terms used in this Order which are defined in CERCLA or in regulations promulgated under CERCLA shall have the meaning

assigned to them in CERCLA or in such regulations. Whenever terms listed below are used in this Order or in the appendices attached hereto and incorporated hereunder, the following definitions shall apply:

a. "CERCLA" shall mean the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, 42 U.S.C. § 9601, *et seq.*

b. "Day" shall mean a calendar day. In computing any period of time under this Order, where the last day would fall on a Saturday, Sunday, or Federal holiday, the period shall run until the close of business of the next working day.

c. "DEQ" or "State" shall mean the State of Oregon Department of Environmental Quality and any successor departments or agencies thereof.

d. "Effective Date" shall be the effective date of this Order as provided in Section XXX.

e. "Engineering Evaluation/Cost Analysis" (EE/CA) shall have the definition and attributes described in the NCP, as may be modified by this Order.

f. "EPA" shall mean the United States Environmental Protection Agency and any successor departments or agencies of the United States.

g. "Future Response Costs" shall mean all costs, including, but not limited to, direct and indirect costs, that the United States has incurred in scoping, planning, developing and negotiating this Order, in reviewing or developing plans, reports and other items pursuant to this Order, verifying the Work, coordinating with DEQ, the Tribes, and Natural Resource Trustees regarding the removal action, or otherwise implementing, overseeing, or enforcing this Order,

including but not limited to, payroll costs, contractor costs, travel costs, laboratory costs, costs incurred by EPA associated with EPA's preparation of any EPA decision documents (including any Action Memoranda or EE/CA approval memo), the costs incurred pursuant to Paragraph 27, (costs and attorneys fees and any monies paid to secure access, including the amount of just compensation), Paragraph 37. (emergency response), and Paragraph 65. (work takeover), as well as any other enforcement activities related to the Terminal 4 Removal Action Area undertaken by EPA. Future Response Costs shall not include the costs of data gathered by EPA that is not related to this Order.

h. "Interest" shall mean interest at the rate specified for interest on investments of the EPA Hazardous Substance Superfund established by 26 U.S.C. § 9507, compounded annually on October 1 of each year, in accordance with 42 U.S.C. § 9607(a). The applicable rate of interest shall be the rate in effect at the time the interest accrues. The rate of interest is subject to change on October 1 of each year.

i. "National Contingency Plan" or "NCP" shall mean the National Oil and Hazardous Substances Pollution Contingency Plan promulgated pursuant to Section 105 of CERCLA, 42 U.S.C. § 9605, codified at 40 C.F.R. Part 300, and any amendments thereto.

j. "Order" shall mean this Administrative Order on Consent and all appendices attached hereto (listed in Section XXIX). In the event of conflict between this Order and any appendix, this Order shall control.

k. "Paragraph" shall mean a portion of this Order identified by an Arabic numeral.

l. "Parties" shall mean EPA and Respondent.

m. "RCRA" shall mean the Solid Waste Disposal Act, as amended, 42 U.S.C. §§ 6901, *et seq.* (also known as the Resource Conservation and Recovery Act).

n. "Section" shall mean a portion of this Order identified by a Roman numeral.

o. "Site" shall mean the Portland Harbor Superfund Site, in Portland, Multnomah County, Oregon, listed on the National Priorities List (NPL) on December 1, 2000. 65 Fed. Reg. 75179-01. The Site consists of the areal extent of contamination, including all suitable areas in proximity to the contamination necessary for implementation of response action, at, from and to the Portland Harbor Superfund Site Assessment Area from approximately River Mile 3.5 to River Mile 9.2(Assessment Area), including uplands portions of the Site that contain sources of contamination to the sediments at, on or within the Willamette River. The boundaries of the Site will be initially determined upon issuance of a Record of Decision for the Portland Harbor Superfund Site.

p. "Statement of Work" or "SOW" shall mean the statement of work for implementation of the removal action, as set forth in Appendix A to this Order, and any modifications made thereto in accordance with this Order.

q. "Terminal 4 Removal Action Area" or "Removal Action Area" shall mean that portion of the Site adjacent to and within the Port of Portland's Terminal 4 at 11040 North Lombard, Portland, Multnomah County, Oregon: extending west from the ordinary high water line on the northeast bank of the lower Willamette River to the edge of the navigation channel, and extending south from the downstream end of Berth 414 to the downstream end of Berth 401,

including Slip 1, Slip 3, and Wheeler Bay, that is depicted generally on the map attached as Appendix A.

r. "Waste Material" shall mean 1) any "hazardous substance" under Section 101(14) of CERCLA, 42 U.S.C. § 9601(14); 2) any pollutant or contaminant under Section 101(33) of CERCLA, 42 U.S.C. § 9601(33); 3) any "solid waste" under Section 1004(27) of RCRA, 42 U.S.C. § 6903(27); and 4) any "hazardous substance" under ORS 465.200 et seq.

s.. "Work" shall mean all activities Respondent is required to perform under this Order.

IV. FINDINGS OF FACT

11. EPA finds the following facts which Respondent neither admits nor denies:

a. The Port of Portland, a port district of the State of Oregon, owns the Terminal 4 uplands located between River Miles 4.1 and 4.5 on the Lower Willamette River. The Port also owns a portion of the submersible and submerged lands in Slips 1 and 3 located within the Removal Action Area, as depicted on Appendix A. The remainder of submersible or submerged land is owned by the State of Oregon Department of State Lands ("DSL"), also as depicted on Appendix A. Terminal 4 is an operating marine facility that includes a variety of tenant operations, including importation of automobiles, exportation of soda ash, import and export of dry and liquid bulk cargo, including vegetable oil and molasses, associated rail inter-modal facilities, and associated petroleum product storage facilities. Historically, Slip 3 has been used for loading and unloading dry and liquid bulk cargo such as Bunker C, diesel, pencil pitch and metal ores. Historically, Slip 1 has been used for bulk and break-bulk cargo loading and

unloading operations handling liquid fertilizer, lead and zinc concentrates, cured meats, agricultural produce, flour, vegetable oils, molasses, tallow, caustic soda, and a variety of general cargoes.

b. Hazardous substances found in the Removal Action Area to date include, but may not be limited to, polyaromatic hydrocarbons (PAHs), metals (mercury, cadmium, chromium, lead, and zinc), pesticides and polychlorinated biphenyls (PCBs). PAHs in surface sediments exceed Lower Columbia River Management Area Maximum Level (ML) values, which are the least conservative biological adverse effects threshold values. When compared to their respective ML values, total low molecular weight PAHs (LPAHs) were found to exceed it up to a factor of 4 and total high molecular weight PAHs (HPAHs) exceeded that value as much as a factor of 11. When compared to other established biological adverse effects threshold values, PAHs and metals in the Removal Action Area show significantly higher potential adverse effects.

c. Sources of releases of hazardous substances, pollutants or contaminants into the Terminal 4 Removal Action Area include, but are not limited to: pencil pitch handling procedures and spills, petroleum handling and storage, contaminated groundwater seeps from petroleum spills and an abandoned pipeline; metal ores spilling from bulk handling practices; and storm water runoff. Contaminated sediment also may have migrated to the Removal Action Area from other areas of the Willamette River.

V. CONCLUSIONS OF LAW AND DETERMINATIONS

12. Based on the Findings of Fact set forth above EPA has determined that:

a. The Terminal 4 Removal Action Area is a "facility" as defined by Section

101(9) of CERCLA, 42 U.S.C. § 9601(9), and includes onshore facilities, offshore facilities, and inland waters of the United States and navigable waters, as defined in Section 311(a)(10), (11) and (16) of the CWA, 33 U.S.C. § 1321(a), and Sections 1001(24) and (21) of OPA, 33 U.S.C. § 2701(24) and (21).

b. Wastes and constituents found at or adjacent to the Terminal 4 Removal Action Area, as identified in the Findings of Fact above, are "hazardous substances" as defined by Section 101(14) of CERCLA, 42 U.S.C. § 9601(14), or constitute "any pollutant or contaminant" which may present an imminent and substantial danger to the public health or welfare under Section 104(a)(1) of CERCLA, 42 U.S.C. § 9604(a)(1). Some of the PAHs at the Removal Action Area, as identified in the Findings of Fact, are from discharges of oil, as defined in Section 311(a)(1) and (2) of CWA, 33 U.S.C. § 1321(a)(1) and (2), and Section 1001(23) and (7) of OPA, 33 U.S.C. § 2701(23) and (7).

c. Respondent is a "person" as defined by Section 101(21) of CERCLA, 42 U.S.C. § 9601(21), and/or Section 311(a)(7) of CWA, 33 U.S.C. § 1321(a)(7), and Section 1001(27) of OPA, 33 U.S.C. § 2701(27).

d. Respondent is a responsible party under Section 107(a) of CERCLA, 42 U.S.C. § 9607(a), and is liable for performance of response action and for response costs incurred and to be incurred for the Terminal 4 Removal Action Area. Respondent is an "owner" and/or "operator" of the Terminal 4 Removal Action Area, as defined by Section 101(20) of CERCLA, 42 U.S.C. § 9601(20), and within the meaning of Section 107(a)(1) of CERCLA, 42 U.S.C. § 9607(a)(1); and/or arranged for disposal or treatment, or arranged with a transporter for transport

for disposal or treatment of hazardous substances at the facility, within the meaning of Section 107(a)(3) of CERCLA, 42 U.S.C. § 9607(a)(3).

e. The conditions described in the Findings of Fact above constitute an actual or threatened "release" of a hazardous substance from the facility as defined by Section 101(22) of CERCLA, 42 U.S.C.§ 9601(22). The presence of actual or threatened discharges of oil at the facility from vessels and/or facilities in violation of Section 311(b) of CWA, 33 U.S.C. § 1321(b), may be an imminent and substantial threat to the public health or welfare of the United States, including fish, shellfish, wildlife, public and private property, shorelines, beaches, habitat, and/or other living and nonliving natural resources under the jurisdiction or control of the United States.

f. The removal action required by this Order is necessary to protect the public health, welfare, or the environment and, if carried out in compliance with the terms of this Order, will be considered consistent with the NCP, as provided in Section 300.700(c)(3)(ii) of the NCP.

g. A planning period of at least six months exists before field activities beyond sampling and related scoping activities required by this Order must be initiated.

VI. ORDER

Based upon the foregoing Findings of Fact, Conclusions of Law, Determinations, and the Administrative Record for the Portland Harbor Superfund Site, including the Terminal 4 Removal Area, it is hereby Ordered and Agreed that Respondent shall comply with all provisions of this Order, including, but not limited to, all appendices to this Order and all documents incorporated by reference into this Order.

VII. DESIGNATION OF CONTRACTOR, AND PROJECT COORDINATOR

13. Respondent shall retain one or more contractors or qualified employees to perform the Work and shall notify EPA of the name(s) and qualifications of such contractor(s) and/or employee(s) within 10 days of the Effective Date. Respondent shall also notify EPA in writing of the name(s) and qualification(s) of any other contractor(s) or subcontractor(s) or employees retained to perform the Work at least 7 days prior to that contractor's or subcontractor's commencement of such Work. EPA retains the right to disapprove of any or all of the contractors and/or subcontractors or employees retained by Respondent to perform the Work. If EPA disapproves of a selected contractor or employee, Respondent shall retain a different contractor or employee and shall notify EPA of that contractor's or employee's name and qualifications within 10 days of EPA's disapproval.

14. Respondent designates Anne Summers as its Project Coordinator. Respondent's Project Coordinator shall be responsible for the administration of all actions by Respondent required by this Order. To the greatest extent possible, the Project Coordinator shall be present or readily available during field Work. Respondent must notify EPA if it plans to change its Project Coordinator and must provide EPA with the new Project Coordinator's name, address, telephone number, and qualifications. EPA retains the right to disapprove of the designated Project Coordinator. If EPA disapproves of the designated Project Coordinator, Respondent shall retain a different Project Coordinator and shall notify EPA of that person's name, address, telephone number, and qualifications within 7 days following EPA's disapproval. Receipt by Respondent's Project Coordinator of any notice or communication from EPA relating to this

Order shall constitute receipt by Respondent.

15. EPA designates Sean Sheldrake of the Office of Environment Cleanup (ECL), Region X, as its Project Coordinator. Except as otherwise provided in this Order, Respondent shall direct all submissions required by this Order to the EPA Project Coordinator at 1200 Sixth Avenue, M/S ECL-111, Seattle, WA 98101 and when possible via email to sheldrake.sean@epa.gov.

16. EPA and Respondent shall each have the right, subject to Paragraph 14, to change their respective designated Project Coordinator. Respondent shall notify EPA 7 days before such a change is made. The initial notification may be made orally, but shall be promptly followed by a written notice.

VIII. WORK TO BE PERFORMED

17. Respondent shall perform, at a minimum, all actions necessary to implement the Statement of Work (SOW), which is attached as Appendix B.

18. The EPA Guidance on Conducting Non-Time-Critical Removal Actions under Superfund (OSWER Directive 9360.0-32) and any additional relevant guidance shall be followed in implementing the SOW.

19. The primary objective of this removal action is to significantly reduce the potential risk to human health and the environment resulting from potential exposure to hazardous substances, pollutants or contaminants and to remove the discharge of oil or to mitigate or prevent the threat of a discharge of oil from the Terminal 4 Removal Action Area.

20. For all Work, EPA may approve, disapprove, require revisions to, or modify a deliverable in whole or in part. If EPA requires revisions, Respondent shall submit a revised deliverable within 30 days of receipt of EPA's notification of the required revisions, unless otherwise noted in the SOW. Respondent shall implement the Work as approved in writing by EPA in accordance with the schedule approved by EPA. Once approved, or approved with modifications, the Work and the schedule, and any subsequent modifications, shall be incorporated into and become fully enforceable under this Order.

21. Respondent shall not commence any Work except in conformance with the terms of this Order. Respondent shall not commence implementation of the Work developed hereunder until after receiving written EPA approval pursuant to this Section.

22. Quality Assurance and Sampling.

a. All sampling and analyses performed pursuant to this Order shall conform to EPA direction, approval, and guidance regarding sampling, quality assurance/quality control ("QA/QC"), data validation, and chain of custody procedures. Respondent shall ensure that the laboratory used to perform the analyses participates in a QA/QC program that complies with the appropriate EPA guidance. Respondent shall follow, as appropriate, "Quality Assurance/Quality Control Guidance for Removal Activities: Sampling QA/QC Plan and Data Validation Procedures" (OSWER Directive No. 9360.4-01, April 1, 1990), as guidance for QA/QC and sampling. Respondent shall only use laboratories that have a documented Quality System that complies with ANSI/ASQC E-4 1994, "Specifications and Guidelines for Quality Systems for Environmental Data Collection and Environmental Technology Programs" (American National

Standard, January 5, 1995), and "EPA Requirements for Quality Management Plans (QA/R-2) (EPA/240/N-01/002, March 2001)," or equivalent documentation as determined by EPA. EPA may consider laboratories accredited under the National Environmental Laboratory Accreditation Program ("NELAP") as meeting the Quality System requirements.

b. Upon request by EPA, Respondent shall have such a laboratory analyze samples submitted by EPA for QA monitoring. Respondent shall provide to EPA the QA/QC procedures followed by all sampling teams and laboratories performing data collection and/or analysis.

c. Upon request by EPA, Respondent shall allow EPA or its authorized representatives to take split and/or duplicate samples. Respondent shall notify EPA not less than 20 days in advance of any sample collection activity, unless shorter notice is agreed to by EPA. EPA shall have the right to take any additional samples that EPA deems necessary. Upon request, EPA shall allow Respondent to take split or duplicate samples of any samples it takes as part of its oversight of Respondent's implementation of the Work.

23. Reporting.

a. After the Effective Date and until EPA provides a Notice of Completion of Work pursuant to Section XXVIII, Respondent shall submit a written progress report to EPA concerning actions undertaken pursuant to this Order on the 15th day of each month after the Effective Date, unless otherwise directed in writing by the EPA Project Coordinator. These reports shall describe all significant developments during the preceding period, including the actions performed and any problems encountered, analytical data received during the reporting

period, and the developments anticipated during the next reporting period, including a schedule of actions to be performed, anticipated problems, and planned resolutions of past or anticipated problems. EPA may require more frequent progress reporting during implementation of the removal action, as it determines necessary when approving Respondent's design and/or removal action work plan.

b. Respondent shall, at least 30 days prior to the sale or lease of any interest in real property owned or controlled by Respondent at the Removal Action Area, give written notice to the transferee that the property is subject to this Order and written notice to EPA of the proposed sale or lease, including the name and address of the transferee. Respondent shall also as a condition of the transfer require that the transferee and its successors comply with Sections IX (Site Access) and X (Access to Information) of this Order.

24. Final Removal Completion Report. Within 30 days after completion of all Work required by this Order, Respondent shall submit for EPA review and approval a final report summarizing the actions taken to comply with this Order. The final report shall conform, at a minimum, with the requirements set forth in Section 300.165 of the NCP entitled "OSC Reports" and with "Superfund Removal Procedures: Removal Response Reporting - POLREPS and OSC Reports" (OSWER Directive No. 9360.3-03, June 1, 1994). The final report shall include a good faith estimate of total costs or a statement of actual costs incurred in complying with the Order, a listing of quantities and types of Waste Materials removed off-Site or handled on-Site, a discussion of removal and disposal options considered for those materials, a listing of the ultimate destination(s) of those materials, a presentation of the analytical results of all sampling

and analyses performed, and accompanying appendices, containing all relevant documentation generated during the removal action (e.g., manifests, invoices, bills, contracts, and permits). The final report shall also include the following certification signed by a person who supervised or directed the preparation of that report:

"Under penalty of law, I certify that to the best of my knowledge, after appropriate inquiries of all relevant persons involved in the preparation of the report, the information submitted is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

25. Off-Site Shipments.

a. Respondent shall, prior to any off-site shipment of Waste Material from the Terminal 4 Removal Action Area to an out-of-state waste management facility, provide written notification of such shipment of Waste Material to the appropriate state environmental official in the receiving facility's state and to the EPA Project Coordinator. However, this notification requirement shall not apply to any off-site shipments when the total volume of all such shipments will not exceed 10 cubic yards.

i. Respondent shall include in the written notification the following information: 1) the name and location of the facility to which the Waste Material is to be shipped; 2) the type and quantity of the Waste Material to be shipped; 3) the expected schedule for the shipment of the Waste Material; and 4) the method of transportation. Respondent shall notify the state in which the planned receiving facility is located of major changes in the

shipment plan, such as a decision to ship the Waste Material to another facility within the same state, or to a facility in another state.

ii. The identity of the receiving facility and state will be determined by Respondent following the award of the contract for the removal action. Respondent shall provide the information required by Paragraph 25(a)(i) as soon as practicable after the award of the contract and before the Waste Material is actually shipped.

b. Before shipping any hazardous substances, pollutants, or contaminants from the Terminal 4 Removal Action Area to an off-site location, Respondent shall obtain EPA's certification that the proposed receiving facility is operating in compliance with the requirements of CERCLA Section 121(d)(3), 42 U.S.C. § 9621(d)(3), and 40 C.F.R. § 300.440. Respondent shall only send hazardous substances, pollutants, or contaminants from the Terminal 4 Removal Action Area to an off-site facility that complies with the requirements of the statutory provision and regulation cited in the preceding sentence.

IX. ACCESS/INSTITUTIONAL CONTROLS

26. If any portion of the Terminal 4 Removal Action Area, or any other property where access is needed to implement this Order, is owned and controlled by Respondent, Respondent shall, commencing on the Effective Date, provide EPA and its representatives, including contractors, with access at all reasonable times to the Terminal 4 Removal Action Area, or such other property, for the purpose of conducting any activity related to this Order. If after the removal action is complete restrictions on the use of Respondent's property, including the beds or banks of the slips or Willamette River, is necessary to maintain the removal action or avoid

exposure to hazardous substances, pollutants or contaminants, Respondent shall take any and all actions to establish, implement, and maintain the necessary institutional controls. Respondent shall establish, implement, and maintain the necessary institutional controls on the schedule and for the duration provided in the EE/CA and/or any work plans or reports developed under this Order.

27. If any portion of the Terminal 4 Removal Action Area, or any other riparian property where access is needed to implement this Order, is owned by or in the control of someone other than Respondent, Respondent shall use best efforts to obtain all necessary access for Respondent, EPA, DEQ, the Tribal Governments, and Natural Resource Trustees, and their representatives and agents, for performing and overseeing any of the investigation and analysis work required to be done in the SOW, including but not limited to, sampling, surveying, monitoring, through EPA approval of the EE/CA. Necessary access agreements shall be obtained within 60 days of the Effective Date of this Order. Throughout the EE/CA process, if other properties or areas that are owned or controlled by someone other than Respondent are determined to be needed for purposes of this Order, Respondent shall use its best efforts to obtain access from such person by no later than 30 days before Respondent needs to access the property. Within 60 days after EPA issues its decision document selecting the removal action alternative, where any action under this Order is to be performed in areas owned by or in possession of someone other than Respondent, Respondent shall use best efforts to obtain all necessary access agreements. Respondent shall immediately notify EPA if after using its best efforts it is unable to obtain any such agreements. In such notice, Respondent shall describe in writing a detailed accounting of its efforts to obtain

access. For purposes of this Paragraph, "best efforts" includes the payment of reasonable sums of money in consideration of access. EPA may then assist Respondent in gaining access, to the extent necessary to effectuate the response actions described herein, using such means as EPA deems appropriate. Respondent shall reimburse EPA for all costs and attorney's fees incurred by the United States in obtaining such access, in accordance with the procedures in Section XV (Payment of Future Response Costs).

28. Notwithstanding any provision of this Order, EPA retains all of its access authorities and rights, as well as all of its rights to require land/water use restrictions, including enforcement authorities related thereto, under CERCLA, RCRA, and any other applicable statutes or regulations.

X. ACCESS TO INFORMATION

29. Respondent shall provide copies to EPA, upon request, of all documents and information within its possession or control or that of its contractors or agents relating to activities at the Terminal 4 Removal Action Area or sources of hazardous substances, pollutants or contaminants, or discharges of oil, and to the implementation of this Order, including, but not limited to, sampling, analysis, chain of custody records, manifests, trucking logs, receipts, reports, sample traffic routing, correspondence, or other documents or information related to the Work. Respondent shall also make available to EPA, for purposes of investigation, information gathering, or testimony, its employees, agents, or representatives with knowledge of relevant facts concerning the performance of the Work.

30. Respondent may assert business confidentiality claims covering part or all of the

documents or information submitted to EPA under this Order, to the extent permitted by and in accordance with Section 104(e)(7) of CERCLA, 42 U.S.C. § 9604(e)(7), and 40 C.F.R. § 2.203(b). Documents or information determined to be confidential by EPA will be afforded the protection specified in 40 C.F.R. Part 2, Subpart B. If no claim of confidentiality accompanies documents or information when they are submitted to EPA, or if EPA has notified Respondent that the documents or information are not confidential under the standards of Section 104(e)(7) of CERCLA or 40 C.F.R. Part 2, Subpart B, the public may be given access to such documents or information without further notice to Respondent.

31. Respondent may assert that certain documents, records and other information are privileged under the attorney-client privilege or any other privilege recognized by federal law. If Respondent asserts such a privilege in lieu of providing documents, it shall provide EPA with the following: 1) the title of the document, record, or information; 2) the date of the document, record, or information; 3) the name and title of the author of the document, record, or information; 4) the name and title of each addressee and recipient; 5) a description of the contents of the document, record, or information; and 6) the privilege asserted by Respondent. However, no documents, reports or other information created or generated pursuant to the requirements of this Order shall be withheld on the grounds that they are privileged.

32. No claim of confidentiality shall be made with respect to any data, including, but not limited to, all sampling, analytical, monitoring, hydrogeologic, scientific, chemical, or engineering data, or any other documents or information evidencing conditions at or around the Terminal 4 Removal Action Area.

XI. RECORD RETENTION

33. Until 10 years after Respondent's receipt of EPA's notification pursuant to Section XXVIII (Notice of Completion of Work), Respondent shall preserve and retain at least one copy of all records and documents (including records or documents in electronic form) now in its possession or control or which come into its possession or control that relate in any manner to the performance of the Work or the liability of any person under CERCLA with respect to the Terminal 4 Removal Action Area, regardless of any internal retention policy to the contrary. Until 10 years after Respondent's receipt of EPA's notification pursuant to Section XXVIII (Notice of Completion of Work), Respondent shall also instruct its contractors and agents to preserve all documents, records, and information of whatever kind, nature or description relating to performance of the Work.

34. At the conclusion of this document retention period, Respondent shall notify EPA at least 90 days prior to the destruction of any such records or documents, and, upon request by EPA, Respondent shall deliver any such records or documents to EPA. Respondent may assert that certain documents, records and other information are privileged under the attorney-client privilege or any other privilege recognized by federal law. If Respondent asserts such a privilege, it shall provide EPA with the following: 1) the title of the document, record, or information; 2) the date of the document, record, or information; 3) the name and title of the author of the document, record, or information; 4) the name and title of each addressee and recipient; 5) a description of the subject of the document, record, or information; and 6) the privilege asserted by Respondent. However, no documents, reports or other information created or generated

pursuant to the requirements of this Order shall be withheld on the grounds that they are privileged.

35. Respondent hereby certifies that to the best of its knowledge and belief, after thorough inquiry, it has not altered, mutilated, discarded, destroyed or otherwise disposed of any records, documents or other information (other than identical copies) relating to its potential liability for the Portland Harbor Superfund Site since notification of potential liability by EPA. Respondent hereby agrees that it will fully comply with any and all future EPA requests for information pursuant to Sections 104(e) and 122(e) of CERCLA, 42 U.S.C. §§ 9604(e) and 9622(e), and Section 3007 of RCRA, 42 U.S.C. § 6927.

XII. COMPLIANCE WITH OTHER LAWS

36. Respondent shall perform all actions required pursuant to this Order in accordance with all applicable local, state, and federal laws and regulations except as provided in Section 121(e) of CERCLA, 42 U.S.C. § 9621(e), and 40 C.F.R. §§ 300.400(e) and 300.415(j). In accordance with 40 C.F.R. § 300.415(j), all actions required pursuant to this Order shall, to the extent practicable, as determined by EPA, considering the exigencies of the situation, attain applicable or relevant and appropriate requirements (ARARs) under federal environmental, tribal environmental, or state environmental or facility siting laws. No local, state, or federal permit shall be required for any action conducted entirely on-Site, including studies, where such action is selected and carried out in compliance with this Order.

XIII. EMERGENCY RESPONSE AND NOTIFICATION OF RELEASES

37. In the event of any action or occurrence during performance of the Work which

causes or threatens to cause a release of Waste Material from the Terminal 4 Removal Action Area that constitutes an emergency situation or may present an immediate threat to public health or welfare or the environment, Respondent shall immediately take all appropriate action. Respondent shall take these actions in accordance with all applicable provisions of this Order, in order to prevent, abate or minimize such release or endangerment caused or threatened by the release. Respondent shall also immediately notify the EPA Project Coordinator or, in the event of his/her unavailability, the Regional Duty Officer, Environmental Cleanup Office, Emergency Response Unit, EPA Region X, 206-553-1263, of the incident or conditions. In the event that Respondent fails to take appropriate response action as required by this Paragraph, and EPA takes such action instead, Respondent shall reimburse EPA all costs of the response action not inconsistent with the NCP pursuant to Section XV (Payment of Future Response Costs).

38. In addition, in the event of any discharge of oil or any release of a hazardous substance from or to the Removal Action Area, Respondent shall immediately notify the EPA Project Coordinator and the National Response Center at (800) 424-8802. Respondent shall submit a written report to EPA within 7 days after each release or discharge, setting forth the events that occurred and the measures taken or to be taken to mitigate any release, discharge, or endangerment caused or threatened by the release and to prevent the reoccurrence of such a release. This reporting requirement is in addition to, and not in lieu of, reporting under Section 103(c) of CERCLA, 42 U.S.C. § 9603(c), and Section 304 of the Emergency Planning and Community Right-To-Know Act of 1986, 42 U.S.C. § 11001, *et seq.*, and Section 311 of the CWA, 33 U.S.C. § 1321.

XIV. AUTHORITY OF EPA PROJECT COORDINATOR

39. The EPA Project Coordinator shall be responsible for overseeing Respondent's implementation of this Order. The Project Coordinator shall have the authority vested in an On-Scene Coordinator (OSC) by the NCP, including the authority to halt, conduct, or direct any Work required by this Order, or to direct any other removal action undertaken at the Terminal 4 Removal Action Area, as well as the authority of a Remedial Project Manager (RPM) as set forth in the NCP. Absence of the EPA Project Coordinator from the Removal Action Area shall not be cause for stoppage of work unless specifically directed by the EPA Project Coordinator.

XV. PAYMENT OF FUTURE RESPONSE COSTS

40. Payments for Future Response Costs.

a. Respondent shall pay EPA all Future Response Costs not inconsistent with the NCP. On a periodic basis, EPA will send Respondent a bill requiring payment that includes a certified Agency Financial Management System summary (SCORPIOS), or other regionally prepared cost summary, which includes direct and indirect costs incurred by EPA and its contractors. Respondent shall make all payments within 30 days of receipt of each bill requiring payment, except as otherwise provided in Paragraph 43 of this Order. Within the 30-day payment period, Respondent may request to review the following underlying EPA oversight cost documentation: EPA personnel time sheets, travel authorizations and vouchers; EPA contractor monthly invoices; and all applicable contract laboratory program (CLP) invoices.

b. Respondent shall make all payments required by this Paragraph by a certified or cashier's check or checks made payable to "EPA Hazardous Substance Superfund-Portland

Harbor Special Account," referencing the name and address of the parties making payment, the Docket Number of this Order, and EPA Site/Spill ID number 10BC and shall be clearly designated as Response Costs: Portland Harbor Superfund Site, Terminal 4 Removal Action Area. Respondent shall send the check(s) to:

Mellon Client Services Center
EPA Region 10
ATTN: Superfund Accounting
P.O. Box 360903M
500 Ross Street
Pittsburgh, Pennsylvania 15251

c. At the time of payment, Respondent shall send notice that payment has been made to the Financial Management Officer, Environmental Protection Agency, Region 10, 1200 Sixth Avenue, M/S OMP-146, Seattle, Washington 98101-1128.

41. The total amount to be paid by Respondent under this Order shall be deposited in the Portland Harbor Special Account within the EPA Hazardous Substance Superfund to be retained and used to conduct or finance response actions at or in connection with the Site, or to be transferred by EPA to the Hazardous Substance Superfund.

42. If payments for Future Response Costs are not made within 30 days of Respondent's receipt of a bill, Respondent shall pay Interest on the unpaid balance. The Interest on Future Response Costs shall begin to accrue on the date of Respondent's receipt of the bill and shall continue to accrue until the date of payment. Payments of Interest made under this Paragraph shall be in addition to such other remedies or sanctions available to the United States by virtue of Respondent's failure to make timely payments under this Section, including but not limited to,

payment of stipulated penalties pursuant to Section XVIII.

43. Consistent with the dispute resolution provisions in Section XVI of this Order, Respondent may dispute all or part of a bill for Future Response Costs submitted under this Order, if Respondent alleges that EPA has made an accounting error, or if Respondent alleges that a cost item is inconsistent with the NCP, or billed costs are outside the scope of this Order. If any dispute over costs is resolved before payment is due, the amount due will be adjusted as necessary. If the dispute is not resolved before payment is due, Respondent shall pay the full amount of the uncontested costs to EPA as specified in this Section on or before the due date. Within the same time period, Respondent shall pay the full amount of the contested costs into an interest-bearing escrow account. Respondent shall simultaneously transmit a copy of both checks to the persons listed in this Section above, together with a copy of the correspondence that established and funds the escrow account, including, but not limited to, information containing the identity of the bank and bank account under which the escrow account is established as well as a bank statement showing the initial balance of the escrow account. Respondent shall instruct the bank that the prevailing party or parties in the dispute shall receive the amount upon which they prevailed from the escrow funds plus interest within 10 days after the dispute is resolved.

XVI. DISPUTE RESOLUTION

44. Unless otherwise expressly provided for in this Order, the dispute resolution procedures of this Section shall be the exclusive mechanism for resolving disputes arising under this Order. The Parties shall attempt to resolve any disagreements concerning this Order expeditiously and informally.

45. If Respondent objects to any EPA action taken pursuant to this Order, including billings for Future Response Costs, it shall notify EPA in writing of its objection(s) within 14 days of such action, unless the objection(s) has/have been resolved informally, or EPA has agreed to extend the informal dispute resolution period in writing. Respondent's notice shall provide all of the reasons for its objections and attach any supporting information or documentation that it is relying on to raise the dispute. EPA and Respondent shall then have 30 days from EPA's receipt of Respondent's written objection(s) to resolve the dispute through formal negotiations (the "Negotiation Period") with EPA's Remedial Action Unit Manager. EPA may in its sole discretion prepare a written response to Respondent's written objections. The Negotiation Period may be extended at the sole discretion of EPA. At EPA's discretion and approval, the record may be supplemented during the Negotiation Period.

46. Any agreement reached by the parties pursuant to this Section shall be in writing and shall, upon signature by both parties, be incorporated into and become an enforceable part of this Order. If the Parties are unable to reach an agreement within the Negotiation Period, EPA's position shall be the final decision and binding upon Respondent, unless within 5 days of the end of the Negotiation Period, Respondent requests the determination of EPA's Director of the Office of Environmental Cleanup Office or his/her designee (ECL Director) based on the record created pursuant to Paragraph 45. The ECL Director will issue a written decision on the dispute to Respondent. The ECL Director's decision shall be incorporated into and become an enforceable part of this Order, except as provided below. Respondent's obligations to perform other activities and submit deliverables in accordance with the approved schedules under this Order shall not be

tolled by submission of any objection for dispute resolution under this Section. Following resolution of the dispute, as provided by this Section, Respondent shall fulfill the requirement that was the subject of the dispute in accordance with the agreement reached or with EPA's decision, whichever occurs. Respondent may appeal the ECL Director's written decision to Region X's Regional Administrator only on the following issues: (1) EPA's disapproval of Respondent's recontamination analysis required as part of the EE/CA; and (2) EPA's selection of a removal action alternative upon issuance of a decision document, i.e., Action Memorandum or other decision document. If Respondent seeks to appeal the ECL Director's decision on one or both of the issues set forth above, it must request a determination of the Regional Administrator based on the record created in accordance with Paragraph 45 above, within 5 days of receipt of the ECL Director's decision. The Regional Administrator's decision shall be the final decision on the issue and enforceable under this Order.

47. If Respondent does not comply with EPA's final administrative decision, EPA reserves the right in its sole discretion to seek penalties from Respondent for violation of the Order, to conduct any portion of the Work remaining under the SOW, and/or to pursue any other enforcement option provided in CERCLA. If EPA seeks to enforce this Order in court, Respondent may seek judicial review of EPA's final administrative decision based on the administrative record developed during the dispute resolution process. Any judicial review of the dispute shall be under the arbitrary and capricious standard.

XVII. FORCE MAJEURE

48. Respondent agrees to perform all requirements of this Order within the time limits established under this Order, unless the performance is delayed by a *force majeure*. For purposes of this Order, a *force majeure* is defined as any event arising from causes beyond the control of Respondent, or of any entity controlled by Respondent, including but not limited to its contractors and subcontractors, which delays or prevents performance of any obligation under this Order despite Respondent's best efforts to fulfill the obligation. *Force majeure* does not include financial inability to complete the Work, or increased cost of performance, or a failure to attain performance standards/action levels selected by EPA.

49. If any event occurs or has occurred that may delay the performance of any obligation under this Order, whether or not caused by a *force majeure* event, Respondent shall notify EPA orally within 24 hours of when Respondent first knew that the event might cause a delay. Within 10 days thereafter, Respondent shall provide to EPA in writing an explanation and description of the reasons for the delay; the anticipated duration of the delay; all actions taken or to be taken to prevent or minimize the delay; a schedule for implementation of any measures to be taken to prevent or mitigate the delay or the effect of the delay; Respondent's rationale for attributing such delay to a *force majeure* event if they intend to assert such a claim, including supporting documentation for such a claim; and a statement as to whether, in the opinion of Respondent, such event may cause or contribute to an endangerment to public health, welfare or the environment. Failure to comply with the above requirements shall preclude Respondent from asserting any claim of *force majeure* for that event for the period of time of such failure to comply and for any

additional delay caused by such failure.

50. If EPA agrees that the delay or anticipated delay is attributable to a *force majeure* event, the time for performance of the obligations under this Order that are affected by the *force majeure* event will be extended by EPA for such time as is necessary to complete those obligations. An extension of the time for performance of the obligations affected by the *force majeure* event shall not, of itself, extend the time for performance of any other obligation. If EPA does not agree that the delay or anticipated delay has been or will be caused by a *force majeure* event, EPA will notify Respondent in writing of its decision. If EPA agrees that the delay is attributable to a *force majeure* event, EPA will notify Respondent in writing of the length of the extension, if any, for performance of the obligations affected by the *force majeure* event.

XVIII. STIPULATED PENALTIES

51. Respondent shall be liable to EPA for stipulated penalties in the amounts set forth in this Section for failure to comply with the requirements of this Order specified below, unless excused under Section XVII (*Force Majeure*). "Compliance" by Respondent shall include completion of the activities under this Order or any work plan or other plan approved under this Order identified below in accordance with all applicable requirements of law, this Order, all Appendices, and any plans or other documents approved by EPA pursuant to this Order and within the specified time schedules established by and approved under this Order.

52. Stipulated Penalty Amounts - Work.

a. The following stipulated penalties shall accrue per violation per day for any noncompliance identified in Paragraph 52(b):

Penalty Per Violation Per Day	Period of Noncompliance
$ 1,000	1st through 14th day
$ 2,500	15th through 30th day
$ 5,000	31st day and beyond

b. The final and all submitted drafts of the following Compliance Milestones:

1. Draft and Final EE/CA Work Plan

2. Draft and Final Removal Action Area Characterization Report

3. First and Second Draft and Final EE/CA Report

4. Draft and Final Biological Assessment and CWA Section 404 Memorandums

5. Draft and Final 30% removal action design

6. Draft and Final 60% removal action design

7. Draft and Final 100% removal action design

8. Draft and Final Removal Action Work Plan

9. Draft and Final Removal Action Completion Report

53. Stipulated Penalty Amounts - Reports, Other Non-Compliance, including late Payment of Response Costs. The following stipulated penalties shall accrue per violation per day for failure to submit timely or adequate final and all submitted draft reports or other written documents pursuant to this Order that are not listed in Paragraph 52(b). The following stipulated penalties shall accrue per violation per day for any non-compliance with the requirements of this Order, including late payments of Response Costs.

Penalty Per Violation Per Day	Period of Noncompliance
$ 500	1st through 14th day
$ 1,500	15th through 30th day
$ 2,500	31st day and beyond

54. In the event that EPA assumes performance of a portion or all of the work pursuant to Section XX, Paragraph 65 (Work Takeover), Respondent shall be liable for a stipulated penalty in the amount of $200,000 or 25% of the cost of the Work EPA performs, whichever is less.

55. All penalties shall begin to accrue on the day after the complete performance is due or the day a violation occurs, and shall continue to accrue through the final day of the correction of the noncompliance or completion of the activity. However, stipulated penalties shall not accrue: 1) with respect to a deficient submission under Section VIII (Work to be Performed), during the period, if any, beginning on the 31st day after EPA's receipt of such submission until the date that EPA notifies Respondent of any deficiency; and 2) with respect to a decision by the ECL Director or his/her designee under Section XVI (Dispute Resolution), during the period, if any, beginning on the 7th day after the end of the Negotiation Period until the date that the ECL Director or the Regional Administrator, if applicable, issues a final decision regarding such dispute. Nothing herein shall prevent the simultaneous accrual of separate penalties for separate violations of this Order.

56. Following EPA's determination that Respondent has failed to comply with a requirement of this Order, EPA may give Respondent written notification of the failure and describe the noncompliance. EPA may send Respondent a written demand for payment of the

penalties. However, penalties shall accrue as provided in the preceding Paragraph regardless of whether EPA has notified Respondent of a violation.

57. All penalties accruing under this Section shall be due and payable to EPA within 30 days of Respondent's receipt from EPA of a demand for payment of the penalties, unless Respondent invokes the dispute resolution procedures under Section XVI (Dispute Resolution). All payments to EPA under this Section shall be paid by certified or cashier's check(s) made payable to "EPA Hazardous Substances Superfund," shall be mailed to the Lockbox number and address set forth in Paragraph 40.b, above, shall indicate that the payment is for stipulated penalties, and shall reference the EPA Region and Site/Spill ID Number10BC, the EPA Docket Number of this Order, and the name and address of the parties making payment. Copies of check(s) paid pursuant to this Section, and any accompanying transmittal letter(s), shall be sent to EPA as provided in Paragraph 15, and to other receiving officials at EPA identified in Paragraph 40.c, above.

58. The payment of penalties shall not alter in any way Respondent's obligation to complete performance of the Work required under this Order.

59. Penalties shall continue to accrue during any dispute resolution period, but need not be paid until 15 days after the dispute is resolved by agreement or by receipt of EPA's decision.

60. If Respondent fails to pay stipulated penalties when due, EPA may institute proceedings to collect the penalties, as well as Interest. Respondent shall pay Interest on the unpaid balance, which shall begin to accrue on the date of demand made pursuant to this Section. Nothing in this Order shall be construed as prohibiting, altering, or in any way limiting the ability

of EPA to seek any other remedies or sanctions available by virtue of Respondent's violation of this Order or of the statutes and regulations upon which it is based, including, but not limited to, penalties pursuant to Sections 106(b) and 122(l) of CERCLA, 42 U.S.C. §§ 9606(b) and 9622(l), and punitive damages pursuant to Section 107(c)(3) of CERCLA, 42 U.S.C. § 9607(c)(3). Provided, however, that EPA shall not seek civil penalties pursuant to Section 106(b) or 122(l) of CERCLA or punitive damages pursuant to Section 107(c)(3) of CERCLA for any violation for which a stipulated penalty is provided herein, except in the case of a willful violation of this Order or in the event that EPA assumes performance of a portion or all of the Work pursuant to Section XX, Paragraph 65.

61. Notwithstanding any other provision of this Section, EPA may, in its unreviewable discretion, waive any portion of stipulated penalties that have accrued pursuant to this Order.

XIX. COVENANT NOT TO SUE BY EPA

62. In consideration of the actions that will be performed and the payments that will be made by Respondent under the terms of this Order, and except as otherwise specifically provided in this Order, EPA covenants not to sue or to take administrative action against Respondent pursuant to Sections 106 and 107(a) of CERCLA, 42 U.S.C. §§ 9606 and 9607(a), Section 311(c) of the CWA, 33 U.S.C. § 1321(c), and Section 1002 of OPA, 33 U.S.C. § 2702 for performance of the Work and for recovery of Future Response Costs. This covenant not to sue shall take effect upon the Effective Date and is conditioned upon the complete and satisfactory performance by Respondent of all obligations under this Order, including, but not limited to, payment of Future Response Costs pursuant to Section XIV. This covenant not to sue extends only to Respondent

and does not extend to any other person.

XX. RESERVATIONS OF RIGHTS BY EPA

63. Except as specifically provided in this Order, nothing herein shall limit the power and authority of EPA or the United States to take, direct, or order all actions necessary to protect public health, welfare, or the environment or to prevent, abate, or minimize an actual or threatened release of hazardous substances, pollutants or contaminants, discharges of oil, or hazardous or solid waste on, at, or from the Site. Further, nothing herein shall prevent EPA from seeking legal or equitable relief to enforce the terms of this Order, from taking other legal or equitable action as it deems appropriate and necessary, or from requiring Respondent in the future to perform additional activities pursuant to CERCLA or any other applicable law.

64. The covenant not to sue set forth in Section XIX above does not pertain to any matters other than those expressly identified therein. EPA reserves, and this Order is without prejudice to, all rights against Respondent with respect to all other matters, including, but not limited to:

a. claims based on a failure by Respondent to meet a requirement of this Order;

b. liability for costs not included within the definition of Future Response Costs;

c. liability for performance of response action other than the Work;

d. criminal liability;

e. liability for damages for injury to, destruction of, or loss of natural resources, and for the costs of any natural resource damage assessments;

f. liability arising from the past, present, or future disposal, release or threat of release of Waste Materials outside of the Terminal 4 Removal Action Area; and

g. liability for costs incurred or to be incurred by the Agency for Toxic Substances and Disease Registry related to the Portland Harbor Superfund Site and the Terminal 4 Removal Action Area.

65. Work Takeover. In the event EPA determines that Respondent has ceased implementation of any portion of the Work, is seriously or repeatedly deficient or late in its performance of the Work, or is implementing the Work in a manner which may cause an endangerment to human health or the environment, EPA may assume the performance of all or any portion of the Work as EPA determines necessary. Respondent may invoke the procedures set forth in Section XVI (Dispute Resolution) to dispute EPA's determination that takeover of the Work is warranted under this Paragraph. Costs incurred by the United States in performing the Work pursuant to this Paragraph shall be considered Future Response Costs that Respondent shall pay pursuant to Section XV (Payment of Future Response Costs). Notwithstanding any other provision of this Order, EPA retains all authority and reserves all rights to take any and all response actions authorized by law.

66. Except as specifically provided in this Order, including but not limited to, Section I., Paragraph 4, and Section XXI., each party reserves all rights, claims, privileges, and defenses it may have. EPA's or Respondent's failure to specifically reserve a particular right herein shall not be construed as a waiver of that right.

XXI. COVENANT NOT TO SUE BY RESPONDENT

67. Respondent covenants not to sue and agrees not to assert any claims or causes of action against the United States, or its contractors or employees, with respect to the Work, Future

Response Costs, or this Order, including, but not limited to:

a. any direct or indirect claim for reimbursement from the Hazardous Substance Superfund established by 26 U.S.C. § 9507, based on Sections 106(b)(2), 107, 111, 112, or 113 of CERCLA, 42 U.S.C. §§ 9606(b)(2), 9607, 9611, 9612, or 9613, or any other provision of law;

b. any claim arising out of response actions at or in connection with the Work, including any claim under the United States Constitution, the Oregon State Constitution, the Tucker Act, 28 U.S.C. § 1491, the Equal Access to Justice Act, 28 U.S.C. § 2412, as amended, or at common law; or

c. any claim against the United States pursuant to Sections 107 and 113 of CERCLA, 42 U.S.C. §§ 9607 and 9613, relating to the Work. Except as provided in Paragraph 77 (Waiver of Claims), these covenants not to sue shall not apply in the event the United States brings a cause of action or issues an order pursuant to the reservations set forth in Paragraphs 64 (b), (c), and (e) - (g), but only to the extent that Respondent's claims arise from the same response action, response costs, or damages that the United States is seeking pursuant to the applicable reservation.

68. Nothing in this Agreement shall be deemed to constitute approval or preauthorization of a claim within the meaning of Section 111 of CERCLA, 42 U.S.C. § 9611, or 40 C.F.R. § 300.700(d).

XXII. OTHER CLAIMS

69. By issuance of this Order, the United States and EPA assume no liability for injuries or damages to persons or property resulting from any acts or omissions of Respondent. The United States or EPA shall not be deemed a party to any contract entered into by Respondent or its commissioners, directors, officers, employees, agents, successors, representatives, assigns, contractors, or consultants in carrying out actions pursuant to this Order.

70. Except as expressly provided in Section XIX (Covenant Not to Sue by EPA), nothing in this Order constitutes a satisfaction of or release from any claim or cause of action against Respondent or any person not a party to this Order, for any liability such person may have under CERCLA, other statutes, or common law, including but not limited to any claims of the United States for costs, damages and interest under Sections 106 and 107 of CERCLA, 42 U.S.C. §§ 9606 and 9607.

71. No action or decision by EPA pursuant to this Order shall give rise to any right to judicial review, except as set forth in Section 113(h) of CERCLA, 42 U.S.C. § 9613(h).

XXIII. CONTRIBUTION PROTECTION

72. The Parties agree that Respondent is entitled, as of the Effective Date, to protection from contribution actions or claims as provided by Sections 113(f)(2) and 122(h)(4) of CERCLA, 42 U.S.C. §§ 9613(f)(2) and 9622(h)(4), for "matters addressed" in this Order. The "matters addressed" in this Order are the Work and Future Response Costs related to the Terminal 4 Removal Action Area only. Nothing in this Order precludes the United States or Respondent from asserting any claims, causes of action, or demands against any persons not parties to this Order for

indemnification, contribution, or cost recovery.

73. Respondent agrees that with respect to any suit or claim for contribution brought by it for matters related to this Order, it will notify EPA in writing no later than 60 days prior to the initiation of such suit or claim. Respondent further agrees that with respect to any suit or claim for contribution brought against them for matters related to this Order, it will notify EPA in writing within 10 days of service of the complaint on it. In addition, Respondent shall notify EPA within 10 days of service or receipt of any Motion for Summary Judgment and within 10 days of receipt of any order from a court setting a case for trial.

74. In any subsequent administrative or judicial proceeding initiated by the United States for injunctive relief, recovery of response costs, or other appropriate relief relating to the Terminal 4 Removal Action Area, Respondent shall not assert, and may not maintain, any defense or claim based upon the principles of waiver, res judicata, collateral estoppel, issue preclusion, claim-splitting, or other defenses based upon any contention that the claims raised by the United States in the subsequent proceeding were or should have been addressed in this Order; provided, however, that nothing in this Paragraph affects the enforceability of the covenants not to sue set forth in this Order.

XXIV. INDEMNIFICATION

75. Respondent, to the extent permitted by Article IV., Section 24 of the Constitution of the State of Oregon, and its contractor(s) shall indemnify, save and hold harmless the United States, and its officials, agents, contractors, subcontractors, employees and representatives from any and all claims or causes of action arising from, or on account of, negligent or other wrongful

acts or omissions of Respondent, or its commissioners, officers, directors, employees, agents, contractors, or subcontractors, in carrying out actions pursuant to this Order. In addition, Respondent agrees to pay the United States all costs incurred by the United States, including but not limited to attorneys fees and other expenses of litigation and settlement, arising from or on account of claims made against the United States based on negligent or other wrongful acts or omissions of Respondent, its commissioners, officers, directors, employees, agents, contractors, subcontractors and any persons acting on its behalf or under its control, in carrying out activities pursuant to this Order. The United States shall not be held out as a party to any contract entered into by or on behalf of Respondent in carrying out activities pursuant to this Order. Neither Respondent nor any such contractor shall be considered an agent of the United States.

76. The United States shall give Respondent notice of any claim for which the United States plans to seek indemnification pursuant to this Section and shall consult with Respondent prior to settling such claim.

77. Respondent waives all claims against the United States for damages or reimbursement or for set-off of any payments made or to be made to the United States, arising from or on account of any contract, agreement, or arrangement between Respondent and any person for performance of Work on or relating to the Removal Action Area, including, but not limited to, claims on account of construction delays. In addition, Respondent shall indemnify and hold harmless the United States with respect to any and all claims for damages or reimbursement arising from or on account of any contract, agreement, or arrangement between Respondent and any person for performance of Work on or relating to the Removal Action Area, including, but not limited to, claims on account

of construction delays.

XXV. INSURANCE

78. At least 7 days prior to commencing any field Work under this Order, Respondent shall secure, and shall maintain for the duration of this Order, comprehensive general liability insurance and automobile insurance with limits of at least 1 million dollars, per occurrence, plus Umbrella insurance in excess of the comprehensive general liability and automobile liability coverage in the amount of 4 million dollars per occurrence. Within the same time period, Respondent shall provide EPA with certificates of such insurance and a copy of each insurance policy. In addition, for the duration of the Order, Respondent shall satisfy, or shall ensure that its contractors or subcontractors satisfy, all applicable laws and regulations regarding the provision of worker's compensation insurance for all persons performing the Work on behalf of Respondent in furtherance of this Order. If Respondent demonstrates by evidence satisfactory to EPA that any contractor or subcontractor maintains insurance equivalent to that described above, or insurance covering some or all of the same risks but in an equal or lesser amount, then Respondent need provide only that portion of the insurance described above which is not maintained by such contractor or subcontractor.

XXVI. FINANCIAL ASSURANCE

79. Within 45 days of the Effective Date and on the anniversary of the Effective Date every year thereafter until Notice of Completion of Work in accordance with Section XXVIII below is received from EPA, Respondent shall establish and maintain financial security in the amount of 15 million dollars in one or more of the following forms:

a. A surety bond guaranteeing performance of the Work;

b. One or more irrevocable letters of credit equaling the total estimated cost of the Work;

c. A trust fund;

d. A demonstration that Respondent satisfies the requirements of 40 C.F.R. Part 264.143(f).

80. If Respondent seeks to demonstrate its ability to complete the Work by means of the financial test pursuant to Paragraph 79(d) of this Section, it shall resubmit sworn statements conveying the information required by 40 C.F.R. 264.143(f) annually, by November 30 of each year. In the event that EPA determines at any time that the financial assurances provided pursuant to this Section are inadequate, Respondent shall, within 30 days of receipt of notice of EPA's determination, obtain and present to EPA for approval one of the other forms of financial assurance listed in Paragraph 79 of this Section. Respondent's inability to demonstrate financial ability to complete the Work shall not excuse performance of any activities required under this Order.

81. If, after the Effective Date, Respondent can show that the estimated cost to complete the remaining Work has diminished below the amount set forth in Paragraph 79 of this Section, Respondent may, on any anniversary date of the Effective Date, or at any other time agreed to by the Parties, reduce the amount of the financial security provided under this Section to the estimated cost of the remaining Work to be performed. Respondent shall submit a proposal for such reduction to EPA, in accordance with the requirements of this Section, and may reduce the amount of the security upon approval by EPA. In the event of a dispute, Respondent may reduce the

amount of the security in accordance with the written decision resolving the dispute.

82. Respondent may change the form of financial assurance provided under this Section at any time, upon notice to and approval by EPA, provided that the new form of assurance meets the requirements of this Section. In the event of a dispute, Respondent may change the form of the financial assurance only in accordance with the written decision resolving the dispute.

XXVII. MODIFICATIONS

83. EPA may determine that in addition to tasks defined in the SOW, or initial approved work plans, other additional work may be necessary to accomplish the objectives of the removal action. EPA may request Respondent to perform these response actions and Respondent shall confirm its willingness to perform the additional work, in writing, to EPA within 7 days of receipt of EPA's request or Respondent may invoke dispute resolution. Subject to EPA resolution of any dispute, Respondent shall implement the additional tasks which EPA determines are necessary. Any other requirements of this Order may be modified in writing by mutual agreement of the parties.

85. If Respondent seeks permission to deviate from any approved work plan or schedule or Statement of Work, Respondent's Project Coordinator shall submit a written request to EPA for approval outlining the proposed modification and its basis. Respondent may not proceed with the requested deviation until receiving oral or written approval from the EPA Project .

86. No informal advice, guidance, suggestion, or comment by the EPA Project Coordinator or other EPA representatives regarding reports, plans, specifications, schedules, or any other writing submitted by Respondent shall relieve Respondent of its obligation to obtain any formal

approval required by this Order, or to comply with all requirements of this Order, unless it is formally modified.

XXVIII. NOTICE OF COMPLETION OF WORK

87. When EPA determines, after EPA's review of the Final Removal Action Completion Report, that all Work has been fully performed in accordance with this Order, with the exception of any continuing obligations required by this Order, including post-removal site controls and monitoring, if any, payment of Future Response Costs, or record retention, EPA will provide written notice to Respondent. If EPA determines that any such Work has not been completed in accordance with this Order, EPA will notify Respondent, provide a list of the deficiencies, and require that Respondent correct such deficiencies. Respondent shall implement the modified and approved Work Plan and shall submit a modified Final Removal Action Completion Report in accordance with the EPA notice. Failure by Respondent to implement the approved modified Work Plan shall be a violation of this Order.

XXIX. SEVERABILITY/INTEGRATION/APPENDICES

88. If a court issues an order that invalidates any provision of this Order or finds that Respondent has sufficient cause not to comply with one or more provisions of this Order, Respondent shall remain bound to comply with all provisions of this Order not invalidated or determined to be subject to a sufficient cause defense by the court's order.

89. This Order and its appendices constitute the final, complete and exclusive agreement and understanding among the Parties with respect to the settlement embodied in this Order. The parties acknowledge that there are no representations, agreements or understandings relating to the

settlement other than those expressly contained in this Order. The following appendices are attached to and incorporated into this Order:

a. Appendix A: Map generally depicting the Terminal 4 Removal Action Area and the immediate upland area.

b. Appendix B: Statement of Work

XXX. EFFECTIVE DATE

90. This Order shall be effective on the day it is signed and issued by EPA. The undersigned representative of Respondent certifies that (s)he is fully authorized to enter into the terms and conditions of this Order and to bind Respondent.

XXXI. NOTICES AND SUBMISSIONS

91. Documents including work plans, reports, approvals, disapprovals, and other correspondence which must be submitted under this Order, shall be sent to the individuals at the addresses specified below, unless those individuals give written notice of a change to the other parties. All notices and submissions shall be considered effective one business day after receipt by Respondent's Project Coordinator, unless otherwise provided. Respondent shall also submit such documents in electronic form via email to sheldrake.sean@epa.gov or via CD-ROM.

a. One (1) copy of EPA correspondence or other communications to Respondent's Project Coordinator:

Anne Summers
Port of Portland
P. O. Box 3529
Portland, OR 97208
(503) 944-7508 (telephone)
(503) 944-7353 (fax)

summea@portptld.com (e-mail)

b. Three (3) copies of documents to be submitted to EPA shall be forwarded to:

Sean Sheldrake
U.S. Environmental Protection Agency
1200 Sixth Avenue, ECL-111
Seattle, Washington 98101

c. One (1) copy of documents shall be submitted to DEQ:

James M Anderson
DEQ Northwest Region
2020 SW Fourth Ave
Suite 400
Portland OR 97201

d. One (1) copy to Oregon Department of Fish & Wildlife:

Rick Kepler
Oregon Department of Fish & Wildlife
2501 SW First Avenue
Portland, OR 97207

e. One (1) copy to NOAA:

Helen Hillman
Coastal Resources Coordination
c/o EPA Region 10
1200 Sixth Avenue (MS ECL-117)
Seattle, WA 98101

f. One copy to the U.S. Department of Interior:

Preston Sleeger
Regional Environmental Officer
Pacific Northwest Region
500 NE Multnomah St.
Suite 356
Portland, OR 97232

g. One copy to the Confederated Tribes of the Warm Springs Reservation of Oregon:

Brian Cunninghame
5520 Skyline Drive
Hood River, OR 97031

h. One copy to the Confederated Tribes and Bands of the Yakama Nation:

Lynn Hatcher
Yakima Nation Fisheries Management Program
P.O. Box 1514690 SR 22
Toppenish, WA 98948

i. One copy to the Confederated Tribes of the Grand Ronde Community of Oregon:

Rod Thompson
Confederated Tribes of the Grand Ronde Community of Oregon
47010 SW Hebo Road
Grand Ronde, OR 97347

j. One copy to the Confederated Tribes of the Siletz Indians:

Tom Downey
Environmental Specialist
Confederated Tribes of the Siletz Indians
P.O. Box 549
Siletz, OR 97380

k. One copy to the Confederated Tribes of the Umatilla Indian Reservation:

Audie Huber
Confederated Tribes of the Umatilla Indian Reservation
Department of Natural Resources
73239 Confederated Way
Pendleton, OR 97801

l. One copy to the Nez Perce Tribe:

Rick Eichstaedt
Nez Perce Tribe
P.O. Box 365
Lapwai, ID 83540

It is so ORDERED and Agreed this 2nd day of Oct 2003.

BY: Sylvia Kawabata DATE: 10-2-03
Sylvia Kawabata
ECL Unit Manager
U.S. EPA, Region X

Agreed this 25 day of September 2003.

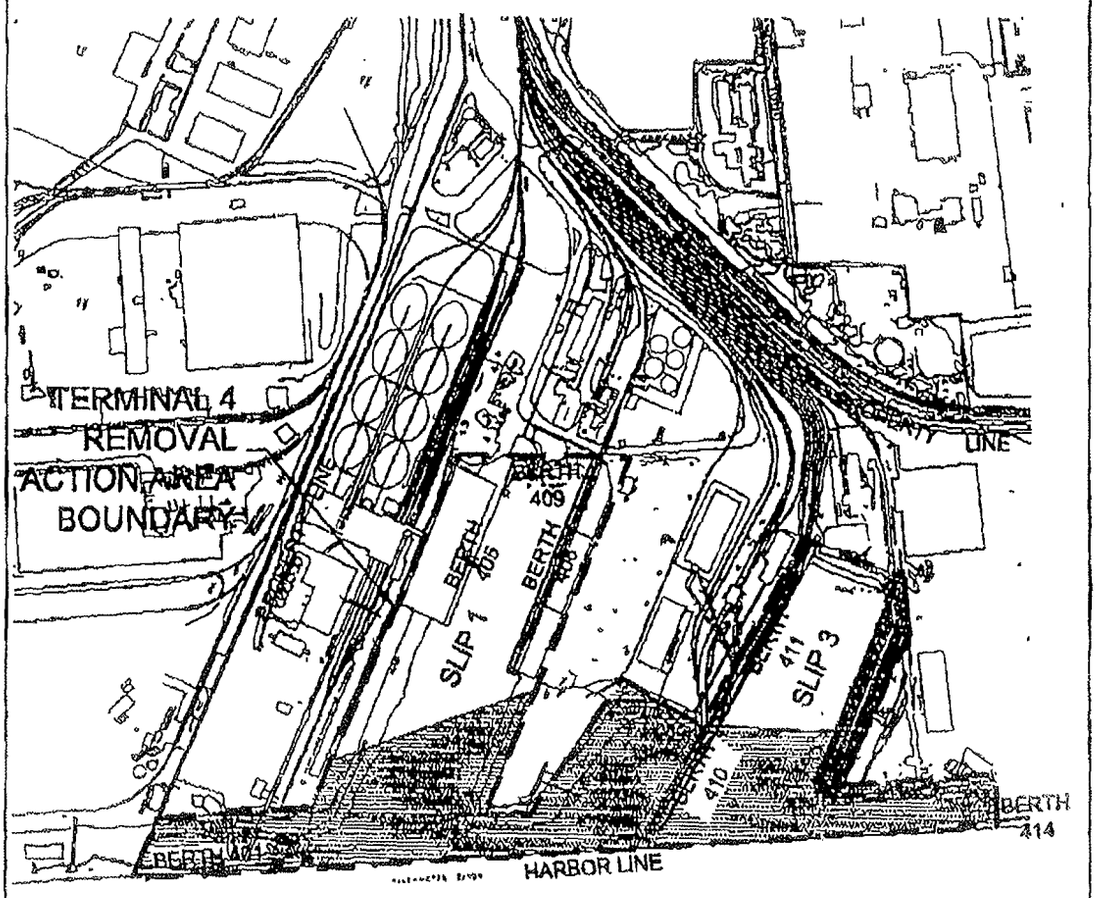
For Respondent Port of Portland

By

Title Executive Director

LAW #2005187

APPENDIX A
TERMINAL 4 REMOVAL ACTION AREA



Map of Terminal 4 Removal Action Area

APPENDIX B

STATEMENT OF WORK

PORT OF PORTLAND TERMINAL 4 REMOVAL ACTION AREA PORTLAND HARBOR SUPERFUND SITE PORTLAND, OREGON

I. PURPOSE

The purpose of this Statement of Work (SOW) is to implement the Administrative Order on Consent for Removal Action (AOC).

The Work to be completed under this SOW shall include preparation, delivery, and implementation of the following:

1. Engineering Evaluation/Cost Analysis (EE/CA) Work Plan (draft and final);
2. Removal Action Area Characterization Report (draft and final);
3. Engineering Evaluation/Cost Analysis (EE/CA) Report (draft and final);
4. Biological Assessment (BA) and Clean Water Act (CWA) (Section 404) Analysis Memorandum;
5. Removal Action Design Documents (conceptual, pre-final and final);
6. Removal Action Work Plan (draft and final);
7. Implementation of Removal Action;
8. Removal Action Completion Report (draft and final);
9. Long-Term Monitoring and Reporting Plan (if appropriate); and
10. Community Involvement Activities

Removal activities shall be completed in accordance with Table 1 of this SOW. The goal is to implement the removal activity beginning in 2007, or as otherwise approved by the Environmental Protection Agency (EPA).

The Respondent will coordinate monthly meetings and/or teleconferences with EPA, DEQ, the Tribes, and the Trustees to discuss the status of work described in this SOW. Monthly meetings may be cancelled or postponed upon agreement between EPA and the Respondent. Respondent will coordinate quarterly meetings with EPA and DEQ and/or updates will be provided regarding source control efforts pertaining to the Removal Action Area. DEQ, the Tribes and the Trustees will submit their comments to EPA. EPA will provide the comments to Respondent that Respondent is to address.

II. WORK TO BE PERFORMED BY RESPONDENT

Deliverables specified in this SOW shall be consistent with "EPA's Guidance on Conducting Non-Time-Critical Removal Actions under CERCLA" (EPA/540/R-93/057, OSWER 9360.0-32). Work to be completed under this SOW shall also include activities

necessary to achieve the criteria and performance standards contained in this SOW work plan, report, or other deliverable approved under the AOC and this SOW.

Respondent shall complete the following tasks:

1. Engineering Evaluation/Cost Analysis (EE/CA) Work Plan

Respondent shall submit an EE/CA Work Plan that will include a summary of existing information, a project work plan, a Sampling and Analysis Plan (SAP) and a Health and Safety Plan (HASP).

The EE/CA Work Plan shall include, at a minimum, the following information:

- Introduction/Purpose;
- Brief description of Port of Portland Terminal 4 Removal Action Area characteristics, including ecological and physical characteristics;
- Identification of historic and potential ongoing sources of contamination to the Port of Portland Terminal 4 Removal Action Area, including past and present operations, drainage, discharges, or other releases;
- Summary of existing information on upstream and upland contamination sources that have the potential to contaminate the Removal Action Area, including a description of environmental investigations, environmental cleanups and planned upland source control measures that will be conducted under agreements with DEQ as the lead agency;
- Terminal 4 historical information including dredging history and identification of past and present property owners, operators, and major tenants in the Port of Portland Terminal 4 Removal Action Area as well as owners and operators of all immediately adjacent upland properties;
- Summary of current Port and tenant marine and associated facility operations and potential access or operational constraints on Work Plan implementation;
- Description of the nature and extent of contamination in the Port of Portland Terminal 4 Removal Action Area, to the extent known, including a summary of existing sediment quality data with a comparison to existing sediment quality guidelines that represent a range of levels including low or no effects (e.g., Threshold Effects Concentrations [TECs], Threshold Effects Levels [TELs], Effects Range Low [ERLs]), as well as levels at which some effects are expected (e.g., Probable Effects Concentrations [PECs], Effects Range Medium [ERMs]). Existing chemistry data will be reviewed to establish Category 1 and Category 2 data categories in accordance with the Portland Harbor RI/FS protocols;

- Summary of results from sediment toxicity testing conducted to date;

- If accepted by the Tribes, a reference to the cultural resource survey performed in consultation with the Tribes, or a process for reaching agreement with the Tribes on a survey, and a process for developing procedures to protect and address such cultural resources;

- A description of the analysis to be conducted to determine the likelihood of post Removal Action recontamination of the Port of Portland Terminal 4 Removal Action Area by upland or upstream sources of contamination;

- Identification of Removal Action Objectives (RAOs), potential Applicable or Relevant and Appropriate Requirements (ARARs), and To Be Considered (TBCs) for the Port of Portland Terminal 4 Removal Action Area, in consultation with State of Oregon and other partners on the Removal Action;

- A description of the analysis to be conducted to determine disposal facility options for contaminated sediment, including a description of the public participation process for selecting a disposal facility; and

- Other information (including maps and figures) necessary to gain a general understanding of the Port of Portland Terminal 4 Removal Action Area.

Respondent shall also identify data gaps that will be filled by the collection and analysis of field data. Investigation activities will focus on problem definition and will result in data of adequate quality and technical content to evaluate the following:

- Nature, extent, and volume of sediment contamination;

- Potential human health and ecological risks resulting from sediment contamination;

- Engineering characteristics of the Removal Action Area including sediment consistency, dredgeability, potential slope stability issues related to dredging, and potential sediment consolidation issues associated with capping;

- Potential water quality effects associated with dredging, piling removal, sheet pile installation, capping, or disposal technologies;

- Alternative technologies for sediment remediation including capping, dredging, treatment (not including treatability testing, which is reserved and may be performed later, if needed) and disposal (on-Site and off-Site); and

- Potential impacts to threatened or endangered species, other biological receptors, and the potential habitat benefits and impacts of the removal action and related disposal.

The procedures Respondent plans to implement when conducting all field activities will be detailed in the SAP that will be included in the EE/CA Work Plan. The SAP will ensure that sample collection and analytical activities are conducted in accordance with technically acceptable protocols and that data meet data quality objectives. The SAP provides a mechanism for planning field activities and consists of a Field Sampling Plan (FSP) and a Quality Assurance Project Plan (QAPP). Details are provided in Section III of this SOW.

Respondent shall also prepare HASP that is designed to protect personnel from physical, chemical and other hazards posed by field sampling efforts. Details are set forth in Section III of this SOW.

Upon request by EPA, Respondent shall also submit copies of previous studies or sampling efforts conducted independently or under local, state or other federal authorities or agreements that are determined by EPA to relate to remedy selection under this Order.

Additionally, Respondent shall continue to work under DEQ supervision on source control efforts related to the Port of Portland Terminal 4 Removal Action Area, which may include source identification, source prioritization, documentation and tracking of source control plans and completed source control actions, evaluating and documenting effectiveness of source control measures, and providing input to EPA and DEQ's decision as to effectiveness of source control in order to implement the Removal Action. The goal is for significant ongoing sources to be controlled to the greatest extent practicable before or during Removal Action implementation such that significant post Removal Action recontamination is not predicted.

2. Removal Action Area Characterization Report

Respondent shall submit a Removal Action Area Characterization Report that includes information from field sampling events, including validated analytical results.

The Removal Action Area Characterization Report shall include, at a minimum, the following sections:

- Introduction/Purpose;
- Summary of the field sampling effort that, at a minimum, includes sampling vessel information, field effort dates, a summary of the sample collection effort (e.g., surface sediment, subsurface sediment, and surface water samples), field sample observations (e.g., sediment descriptions), and a summary of sample and station locations – including station depths (corrected to mean lower low water), station locations (latitudes/longitudes and state plane coordinates), maps and figures;
- Deviations from the FSP;
- Summary of sample handling and shipment; and

- Summary of all data, including a data validation report. Data from this effort shall be provided electronically in a format consistent with other data already acquired under the harbor-wide study.

Respondent shall submit the data validation report to EPA within 5 days of Respondent's receipt of the data validation report from their contractor or in-house source. Information necessary for EPA to perform an independent review of the validated data shall also be provided.

3. Engineering Evaluation/Cost Analysis (EE/CA) Report

Based on data obtained in the previous sampling efforts and work to be performed under this SOW, and in consideration of EPA's guidance for removal actions, Respondent will prepare a technical briefing for EPA, DEQ, the Tribes and the Trustees on the proposed removal alternatives that will be presented by Respondent in the EE/CA.

After the technical briefing, Respondent, in consideration of comments received at the technical briefing, will submit a first draft of the EE/CA.

The first draft EE/CA will be revised in response to EPA comments. A second draft EE/CA shall be submitted to EPA for release for a formal public comment period, following EPA approval and modification if necessary if EPA comments were not adequately addressed. If requested by EPA, a final version of the EE/CA shall be submitted to EPA for review and approval in accordance with the schedule set forth in Table 1 of this SOW. The EE/CA will contain the following sections:

- Executive Summary;
- Introduction;
- Removal Action Area Characterization;
- The result of the analysis regarding the post Removal Action recontamination potential of the Port of Portland Terminal 4 Removal Action Area by upland or upstream sources of contamination, including whether source control actions will be sufficient or if additional actions may be required to control potential sources of significant recontamination;
- Procedures for addressing and protecting cultural resources in the Removal Action Area;
- Identification of Removal Action Objectives;
- Identification and Analysis of Removal Action Technologies;
- Identification and Analysis of Removal Action Alternatives, including the identification and analysis of disposal facility options and incorporating the costs of any Removal Action constraints imposed by current or planned Port or tenant marine and associated facility operations;
- Comparative Analysis of Removal Action Alternatives;
- Recommended Removal Action Alternative, including the selection of any needed disposal facility;

- An assessment of the residual risk anticipated after Removal Action implementation;
- Schedule for recommended Removal Action; and
- Preliminary drafts of the Biological Assessment and Clean Water Act analysis memorandum for the recommended Removal Action alternative (see Section 4 below).

A public comment period of at least thirty (30) days is required for the EE/CA and any supporting documentation. Respondent shall assist EPA, as requested, before and during the comment period with its community relations activities concerning the EE/CA. Respondent shall also assist EPA in compiling the Administrative Record before and during the public comment period. If, based on public comments received, EPA determines additional data or analyses are required to complete the EE/CA, Respondent shall collect such data, or perform such analyses, as determined necessary by EPA.

4. Biological Assessment (BA) and Clean Water Act (CWA) (Section 404) Analysis Memorandum

In order to identify the presence of threatened, endangered, proposed or candidate species, or their habitat, within the vicinity of the proposed Port of Portland Terminal 4 Removal Action Area, Respondent will prepare, for EPA approval, a draft BA to support compliance with the substantive requirements of the Endangered Species Act. The draft BA will characterize baseline conditions of existing habitat; address potential project impacts that the Removal Action may have on these species, their habitat, and their food stocks; and describe best management practices and conservation measures designed to avoid or minimize any negative impacts.

If dredging, capping, or other filling is a component of any of the alternatives, Respondent shall submit a draft memorandum that provides sufficient information to demonstrate compliance with the substantive requirements of Section 404(b) (1) of the CWA. The memorandum shall document the information gathered regarding practicability and cost, long- and short-term impacts from all proposed alternatives, minimization of adverse effects, and an analysis of the need for any mitigation.

5. **Project Design Documents**

After EPA has selected a removal action for the Removal Action Area and set forth its determination and selected action in a Terminal 4 Removal Action Memorandum, Respondent shall prepare project design documents, including construction plans and specifications, to implement the Removal Action and shall demonstrate that the Removal Action design shall meet all objectives of any Action Memorandum or other EPA decision document. Respondent shall meet regularly with EPA prior to and during development of design documents and provide EPA, for review and approval, the key technical documents that support the removal design (see below). Design documents, including plans and specifications, shall be submitted in accordance with the schedule set forth in Table 1 of this SOW.

5.1 Conceptual, Prefinal, and Final Designs

Respondent shall submit the following levels of design:

- Conceptual design when the design effort is 30 percent complete;
- Prefinal design when the design effort is 60 percent complete;
- Final design when the design effort is 100 percent complete.

The final design shall fully address all EPA comments made on the prefinal design.

5.1.1 Conceptual (30 percent) Design shall include an overall explanation of the following as appropriate:

- If the selected alternative includes capping, the conceptual design will show capping areas and conceptual slope and cap designs;
- If the selected alternative includes dredging, the conceptual design will show dredging areas and conceptual cut thicknesses and slope angles;
- Proposed disposal technology (on-Site or off-Site) conceptual design including general disposal location, handling methods and transport approaches;
- Annotated outline of prefinal design analysis report;
- Annotated outline of plan drawings;
- Annotated outline of specifications.

5.1.2 Prefinal (60 percent) Design shall include three separate deliverables as follows:

- Prefinal (60 percent) Design Analysis Report;
- Prefinal (60 percent) Construction Documents and Schedule;
- Prefinal (60 percent) Design Plans.

5.1.2.1 Prefinal (60 percent) Design Analysis Report shall provide the design criteria and the basis of design for the Removal Action. Examples of the types of information to be included are described below:

- Technical parameters and supporting calculations upon which the design will be based, including but not limited to design requirements for each remedial action technology to be employed (e.g., dredging, capping);

- If the selected alternative includes capping:

  - appropriate physical and chemical characteristics of materials to be used for sediment capping and method for identifying and testing clean source material, including acceptance criteria for such material;

  - determinations regarding potential propeller scour for capped areas;

  - cap placement techniques;

- If the selected alternative includes dredging and/or excavation:
  - Identification of requirements for the contractor regarding the handling, transport (including haul routes) and disposal of dredged or excavated sediments, including identification of any best management practices, monitoring, and/or analyses necessary to protect personnel from potential chemical hazards posed by this Removal Action (such activities may be further described in the contractor's HASP);
  - design dredge or excavation depths and overcut allowances, dredged or excavated material volumes, and dredging or excavation techniques;
  - identification of potential location(s) for disposal of dredged or excavated sediments;
  - if the proposed disposal technology is an off-Site upland landfill, the design documents will include descriptions of sediment transloading (from water transport to land transport), stockpiling, dewatering, and overland transport;
  - if the proposed disposal technology is an on-Site near shore Confined Disposal Facility (CDF), the design documents will include fill closure approach, hydrogeologic and contaminant transport evaluation for the fill, static and seismic stability analyses, filling approach, consolidation analysis, and screening of other potential sources of material for the CDF;
- Descriptions of the analyses conducted to select the design approach, including a summary and detailed justification of design assumptions and verification that design will meet performance standards;
- Access and easement requirements, and permit requirements or substantive requirements of permits;
- Plan for reducing negative effects on the environment and community during the construction phase(s);
- An outline of the long-term monitoring and reporting plan; and
- Analysis and recommendations on institutional controls and/or engineering controls that may need to be implemented to ensure the long-term effectiveness of the Removal Action, including descriptions of how such controls would be implemented, by whom, and under what circumstances such controls could be removed or terminated (see "Institutional Controls" OSWER 9355.0-74FS-P, EPA 540-F-00-005, September 2000).

- If appropriate, conduct an update of the analysis regarding post Removal Action recontamination of the Port of Portland Terminal 4 Removal Action Area by upland or upstream sources of contamination, including what source control actions have occurred since the EE/CA analysis, whether additional actions and/or schedule delays may be necessary to control potential sources of significant recontamination.

If the selected alternative includes capping, the cap design shall follow appropriate EPA guidance, including "Guidance for In-Situ Subaqueous Capping of Contaminated Sediments" (EPA 905-B96-004). Performance of capping activities shall be consistent with federal regulations, including the requirements of Sections 401 and 404 of the CWA.

If the selected alternative includes dredging, the performance standards shall be consistent with federal regulations, including requirements of Sections 404 and 401 of the CWA and Section 10 of the Rivers and Harbors Act.

5.1.2.2 Prefinal (60 percent) Construction Documents and Schedule, including:

- Construction plans/drawings/sketches and required specifications;
- Proposed locations of processes/construction activity or specific requirements for such locations;
- Schedule for construction and implementation of the Removal Action that identifies major milestones.

5.1.2.3 Prefinal (60 percent) Design Plans, including:

- Draft Construction Quality Assurance Plan (see Section III of this SOW) which shall detail the remediation verification method and approach to quality assurance during construction activities in the project area, including compliance with ARARs. The Plan will describe the methods used to measure compliance with measurement quality objectives (such as performance and method requirements), including target dredge or excavation depths, if appropriate. The Plan will include, as an attachment, a Draft Removal Action Sampling and Analysis Plan (see Section III of this SOW), which shall include a field sampling plan and a QAPP. If the selected alternative includes capping, performance monitoring will include characterization of in-place capping materials (e.g., coverage and thickness). If the selected alternative includes dredging or excavation, performance monitoring will be performed to confirm that dredged or excavated material is properly staged, dewatered, and transported to a suitable disposal site; and that field construction activities are properly sequenced.
- Draft Water Quality Monitoring Plan and its associated Quality Assurance Project Plan and HASP (see Section III of this SOW), which shall detail water quality monitoring to confirm that water quality standards as defined by substantive requirements of CWA Section 401 water quality certification for compliance with the

requirements in CWA Section 404(b)(1) guidelines are met (or ensure approval to allow temporary exceedances of water quality standards has been received) during any capping and dredging operations and where return-water from barges or de-watering (as appropriate) may affect the water column. The plan shall describe the specific water quality monitoring requirements, including a schedule; sampling locations; sampling intervals; sampling equipment and parameters; analytical methods; key contacts; reporting requirements (including daily reports); daily contacts for notifications of any exceedances; result summaries; and draft and final Water Quality Monitoring reports. A QAPP and a HASP specific to water quality monitoring shall be included in this deliverable.

5.1.3 Final (100 percent) Design:

The 100 percent Final Design submittal shall include the following:

- Final Design Analysis Report;
- Final construction documents and schedule;
- Final Design Plans;
- Operation, Maintenance, and Monitoring Plan;
- Final cost estimate for the Removal Action and estimated cost for long-term monitoring; and
- Final schedule.

6. Removal Action Work Plan

Respondent shall prepare a Removal Action Work Plan that outlines the implementation of the selected Removal Action alternative, including how construction activities are to be implemented by Respondent and coordinated with EPA. The Work Plan shall include, at a minimum, the following elements that are consistent with and implements the approved final design:

- Removal action project plan describing the sequence of activities;
- A description of how the removal action implements the final design;
- Schedule of activities for completion of the Removal Action, including inspections, meetings, and documents referenced in this task;
- Remedial action HASP that is designed to protect personnel from physical, chemical and other potential hazards posed by this Removal Action;
- Construction quality assurance plan (CQAP) and statement of qualifications (for the construction contractor). The CQAP will describe in detail the methods for direct measurements to be made during construction to ensure RAOs and performance standards will be met;

- Remedial action environmental protection plan;

- Procedures for processing design changes and securing EPA review and approval of such changes to ensure changes are consistent with the objectives of this Removal Action;

- Procedures for coordinating with EPA regarding compliance with EPA's Off-Site Rule, as applicable.

The HASP shall follow EPA guidance and all OSHA requirements as outlined in 29 C.F.R. 1910 and 1926. Respondent may utilize existing HASP project documents or other company/contractor HASPs provided that Respondent demonstrates the HASP has been modified, as necessary, or otherwise sufficiently addresses the activities covered by this SOW. Draft and Final versions of the Removal Action Work Plan shall be submitted to EPA for review and approval in accordance with the schedule set forth in Table 1 of this SOW.

7. Implementation of Removal Action

As described in Table 1, Respondent shall provide notification to EPA thirty (30) days prior to initiation of fieldwork to allow EPA to coordinate field oversight activities.

Respondent shall complete the sediment Removal Action in accordance with the approved Final Design documents and Removal Action Work Plan. The following activities shall be completed in constructing the Removal Action.

EPA and Respondent shall participate in a preconstruction meeting to:

- Review methods for documenting and reporting data, and compliance with specifications and plans including methods for processing design changes and securing EPA review and approval of such changes as necessary;

- Review methods for distributing and storing documents and reports;

- Review work area security and safety protocols, as appropriate;

- Demonstrate that construction management is in place, and discuss any appropriate modifications of the CQAP to ensure that project specific considerations are addressed;

- Discuss methods for direct measurement, including confirmation sampling of construction work to be used to ensure performance standards are met;

- If requested, conduct a Removal Action Area tour in the project area to verify that the design criteria, plans, and specifications are understood and to review material and equipment storage locations, as appropriate.

- If appropriate, conduct an update of the analysis regarding post Removal Action recontamination of the Port of Portland Terminal 4 Removal Action Area by upland or upstream sources of contamination, including what source control actions have occurred since the EE/CA analysis, whether additional actions and/or schedule delays may be necessary to control potential sources of significant recontamination.

Respondent shall transmit (electronically) draft key points and action items of the preconstruction meeting to all parties within seven (7) days of the meeting. Respondent shall submit final key points and action items of the preconstruction meeting to all parties within fourteen (14) days of the meeting.

Pursuant to the CQAP, weekly reports shall be prepared and submitted (electronically) to EPA for review during the Removal Action. Weekly reports shall include work performed, problems encountered and solutions proposed, water quality monitoring results, and work to be performed during the following week. If applicable, Respondent shall inform EPA of the off-Site disposal facility proposed to receive any debris or dredged/excavated materials from the Port of Portland Terminal 4 Removal Action Area.

Within seven (7) days after Respondent makes a preliminary determination that construction is complete, Respondent shall orally notify EPA for the purposes of scheduling a final inspection and/or meeting. Within fourteen (14) days after the final inspection and/or meeting, Respondent shall send a letter to EPA stating that construction is complete and responding to any outstanding issues that were raised by EPA during the final inspection/meeting.

8. Removal Action Completion Report

Within 60 days after completion of the construction phase of the Removal Action, Respondent shall submit for EPA review and approval a Removal Action Completion Report. This report shall contain a description of the Work described in the Removal Action Work Plan and the Work that was actually performed. In the report, a registered professional engineer and Respondent shall state that the Removal Action has been constructed in accordance with the design and specifications. The report shall provide as-built drawings, signed and stamped by a professional engineer, showing the area and depth of the location remediated. The final report shall include a good faith estimate of total costs or a statement of actual costs incurred in complying with the Order, a listing of quantities and types of materials removed off-Site or handled on-Site, a listing of the ultimate destination(s) of those materials, a presentation of the analytical results of all sampling and analyses performed (including a map showing the locations of any confirmatory samples), and accompanying appendices containing all relevant documentation generated during the Removal Action (e.g., manifests, invoices, bills, contracts, and permits). All analytical data collected under this AOC shall be provided electronically to EPA. The final Water Quality Monitoring report may be submitted as an appendix to the Removal Action Completion Report. This Removal Action Completion Report shall contain a description of any institutional controls that are in

place, or engineering controls that are necessary to sustain the integrity of the Removal Action, along with copies of any agreements or other documents used to establish and implement such controls.

The final report shall also include the following certification signed by a person who supervised or directed the preparation of that report:

> "Under penalty of perjury under the laws of the United States, I certify that to the best of my knowledge, after appropriate inquiries of all relevant persons involved in the preparation of the report, the information submitted is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment."

9. Long-Term Monitoring and Reporting Plan

If identified as a component of the selected alternative, Respondent shall prepare a Long-Term Monitoring and Reporting Plan for the Port of Portland Terminal 4 Removal Action Area. The Long-Term Monitoring and Reporting Plan shall include inspections and analyses to monitor the Removal Action implemented at the Port of Portland Terminal 4 Removal Action Area.

If required, the Long-Term Monitoring and Reporting Plan shall describe monitoring objectives, an overview of the monitoring approach, design of the monitoring program (e.g., sampling strategy, station locations and replication, field sampling methods, laboratory methods), data analysis and interpretation, reporting requirements, and a schedule. The Plan shall include, as appropriate, visual inspection, bathymetric survey, sediment deposition monitoring, chemical monitoring, and sediment samples in capped areas and non-capped areas (including excavated areas) to monitor for recontamination. Data from long-term monitoring shall be assembled into reports and submitted to EPA in accordance with the schedule set forth in the Long-Term Monitoring and Reporting Plan. Based on long-term monitoring results, EPA shall determine if future response actions are needed to achieve the cleanup objectives.

10. Community Involvement Activities

If requested by EPA, Respondent shall provide information supporting EPA's community involvement programs related to the Work performed pursuant to this Order, and shall participate in public meetings which may be held or sponsored by EPA to explain activities at the Removal Action Area or concerning Work performed pursuant to this Order. As part of the Port's routine public outreach efforts, the Port will consult with EPA regarding the planned outreach effort relating to the Port of Portland Terminal 4 Removal Action and request EPA involvement in such effort. EPA will coordinate its community outreach efforts with DEQ.

III. CONTENT OF SUPPORTING PLANS

1. Sampling and Analysis Plan

Respondent shall develop a project-specific SAP comprising an FSP and a project-specific QAPP for sample analysis and data handling for samples collected at the Removal Action Area. The SAP shall be based upon the AOC, SOW and EPA guidance.

The FSP will define in detail the sampling and data-gathering methods that will be used on the project. It will include sampling objectives, a detailed description of sampling activities, sample locations, sample analysis, sampling equipment and procedures, sampling schedule, station positioning, and sample handling (e.g., sample containers and labels, sample preservation). The SAP will be prepared in accordance with "Methods for Collection, Storage and Manipulation of Sediments for Chemical and Toxicological Analyses: Technical Manual" (EPA/823/B-01-002, October 2001). The content of the SAP shall include the type of information described in EPA's Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA (EPA/540/G-89-004).

The QAPP will describe the quality assurance and quality control protocols necessary to achieve required data quality objectives. The QAPP will be prepared in accordance with "EPA Requirements for Quality Assurance Project Plans (QA/R-5)" (EPA/240/B-01/003, March 2001) and "Guidance on Quality Assurance Project Plans (QA/G-5)" (EPA/600/R-98/018, February 1998). The QAPP will address sampling procedures, sample custody, analytical procedures, and data reduction, validation, reporting, and personnel qualifications. The laboratory performing the work must have and follow an approved Quality Assurance (QA) program, which complies with "EPA Requirements for Quality Management Plans (QA/R-2)" (EPA/240/B-01-002, March 2001) or equivalent documentation as determined by EPA. If a laboratory not in the EPA Contract Laboratory Program (CLP) is selected, the QAPP shall be consistent with the requirements of the CLP for laboratories proposed outside the CLP. Respondent will provide assurances that EPA has access to laboratory personnel, equipment and records for sample collection, transportation, and analysis.

All sampling and analyses performed pursuant to this Order shall conform to EPA direction, approval, and guidance regarding sampling, quality assurance/quality control (QA/QC), data validation, and chain-of-custody procedures. Respondent shall ensure that the laboratory used to perform the analyses participates in a QA/QC program that complies with the appropriate EPA guidance.

Upon request by EPA, Respondent shall have such a laboratory analyze samples submitted by EPA for quality-assurance monitoring. Respondent agrees that EPA personnel may audit any laboratory that performs analytical work under this SOW. Prior to awarding any work to an analytical laboratory, Respondent will inform the laboratory that an audit may be performed, and that the laboratory agrees to coordinate with EPA prior to performing analyses.

Respondent shall provide to EPA the quality assurance/quality control procedures followed by all sampling teams and laboratories performing data collection and/or analysis. Upon request by EPA, Respondent shall allow EPA or its authorized representatives to take split and/or duplicate samples. Respondent shall notify EPA not less than 14 days in advance of any sample collection activity, unless shorter notice is agreed to by EPA. EPA shall have the right to take any additional samples that EPA deems necessary. Upon request, EPA shall allow Respondent to take split or duplicate samples of any samples it takes as part of its oversight of Respondent's implementation of the Work.

All analytical data collected under this SOW shall be provided electronically to EPA.

2. Health and Safety Plan(s)

The HASP(s) ensures protection of health and safety during the performance of work under the AOC and this SOW. The HASP shall be prepared in accordance with EPA's Standard Operating Safety Guide (PUB 9285.1-03, PB 92-963414, June 1992). In addition, the plan shall comply with all currently applicable Occupational Safety and Health Administration ("OSHA") regulations found at 29 C.F.R. Part 1910. Respondent shall incorporate all changes to the plan recommended by EPA and shall implement the plan during the Removal Action.

3. Construction Quality Assurance Plan

The CQAP describes the project-specific components of the performance methods and quality assurance program to ensure that the completed project meets or exceeds all design criteria, plans, and specifications. The draft Plan shall be submitted with the Prefinal design and the Final Plan shall be submitted with the Final Design. The Final Plan shall be submitted prior to the start of construction in accordance with the approved construction schedule. The Plan shall provide requirements for the following elements:

- Responsibilities and authorities of all organization and key personnel involved in the Removal Action construction, including EPA and other agencies.

- Qualifications of the Construction Quality Assurance (CQA) Officer. Establish the minimum training and experience of the CQA Officer and supporting inspection personnel.

- Inspection and verification activities. Establish the observations and tests that will be required to monitor the construction and/or installation of the components of the Removal Action. The plan shall include the scope and frequency of each type of inspection to be conducted. Inspections shall be required to verify compliance with environmental requirements and ensure compliance with all health and safety procedures.

- Performance standards and methods. Describe all performance standards and methods necessary to implement the removal construction. Performance monitoring requirements shall be designed to demonstrate that best management practices have been implemented during dredging operations, dredged or excavated material transportation, and cap placement.

- Sampling activities. Establish requirements for quality assurance sampling activities, including the sampling protocols, sample size, sample locations, frequency of testing, acceptance and rejection data sheets, and plans for correcting problems as addressed in the project specifications.

- Documentation. Establish the reporting requirements for construction quality assurance activities. This shall include such items as daily and weekly summary reports, inspection data sheets, problem identification and corrective measures reports, design acceptance reports, and final documentation. A description of the provisions for final storage of all records consistent with the requirements of the AOC shall be included.

IV. SUMMARY OF MAJOR DELIVERABLES/SCHEDULE

The schedule for submission to EPA of deliverables described in the SOW is presented in Table 1.

TABLE 1 – Schedule of Project Deliverables		
Engineering Evaluation/Cost Analysis (EE/CA) Work Plan	Draft EE/CA Work Plan	Within 90 days after effective date of AOC.
	Final EE/CA Work Plan	Within 30 days after receipt of EPA comments on draft.
Removal Action Area Characterization Report	Draft Removal Action Area Characterization Reports	Within 150 days after EPA approval of the EE/CA Work Plan.
	Final Removal Action Area Characterization Reports	Within 30 days after receipt of EPA comments on draft Report.
Engineering Evaluation/Cost Analysis (EE/CA) Report	Technical Briefing on Proposed Remedial Alternatives	Within 30 days after approval of the Final Removal Action Area Characterization Report by EPA.
	First Draft EE/CA	Within 90 days of the Technical Briefing on Proposed Removal Alternatives.
	Second Draft (Public Review) EE/CA	Within 60 days after receipt of EPA comments on first draft EE/CA.
	Final EE/CA	Within 60 days after receipt of EPA comments on second draft EE/CA.
Biological Assessment and 404 Memorandum	Draft Biological Assessment and Draft Clean Water Act Section 404 Memorandum	Within 90 days after EPA issuance of the Action Memorandum.
	Revised Draft Biological Assessment and Revised Draft Clean Water Act Section 404 Memorandum	Within 30 days after receipt of EPA comments on the draft Biological Assessment and Draft Clean Water Act Section 404 Memorandum.
Project Design Documents	Conceptual (30 percent) Design	Within 90 days of EPA signature of the Action Memorandum.
	Prefinal (60 percent) Design	Within 90 days after receipt of EPA comments on conceptual design.
	Final (100 percent) Design	Within 60 days after receipt of EPA comments on prefinal design.
Removal Action Work Plan	Draft Removal Action Work Plan	Within 60 days after EPA approval of the Contractor.
	Final Removal Action Work Plan	Within 30 days after receipt of EPA comments on draft Removal Action Work Plan.
Implementation of Removal Action	Notification of Removal Action Start	Provide notification to EPA 30 days prior to initiation of Removal Action fieldwork to allow EPA to coordinate field oversight activities.
	Removal Action Start	30 days after Notification Removal Action
Removal Action Completion	Draft Removal Action	Within 60 days after completion of

TABLE 1 – Schedule of Project Deliverables		
Report	Completion Report Final Removal Action Completion Report	Removal Action (construction phase). Within 30 days after receipt of EPA comments on Draft Removal Action Completion Report.
Long-Term Monitoring and Reporting Plan	Draft Long-Term Monitoring and Reporting Plan Final Long-Term Monitoring and Reporting Plan Monitoring Data Reports	Within 60 days after EPA approval of the Final Design. Within 60 days after completion of the removal action and receipt of EPA comments. Schedule to be proposed by Respondent in the Long-Term Monitoring and Reporting Plan.

Reference to EPA comments reflects EPA's consideration of comments, including comments from the Oregon DEQ, the Tribes, and federal and state Natural Resource Trustees.

* * * COMMUNICATION RESULT REPORT (NOV. 24. 2003 3:57PM) * * *

FAX HEADER 1:
FAX HEADER 2:

TRANSMITTED/STORED : NOV. 24. 2003 3:47PM

FILE MODE	OPTION	ADDRESS		RESULT	PAGE
3040 MEMORY TX		G3 :	509 545 1121	OK	10/10

REASON FOR ERROR
E-1) HANG UP OR LINE FAIL
E-2) BUSY
E-3) NO ANSWER
E-4) NO FACSIMILE CONNECTION
E-5) MAIL SIZE OVER

001 - 120 OLD PACIFIC G * LIVE @ 08/27/03 16:39
PURCHASE SETTLEMENT 255-037099

08/28/03 FINAL 08/28/03
US SOFT WHITE WHEAT
00975 BJ RANCHES

CONTRACT	SHEET#	BUSHELS	PRICE	EXTENSION
0181404-01	039198-01	10,000.00	$3.62000	$36,200.00
TOTALS		10,000.00		$36,200.00

WEIGHING & INSPECTION	7.00-
DOCKAGE DISCOUNT	200.01-
GRN ASSESSMENT WASHINGTON	180.00-
SETTLEMENT AMOUNT	35812.99

CHECK 306011 BJ RANCHES 35812.99

THANK YOU FOR YOUR BUSINESS

SETTLED BY LYSA

BJ RANCHES
4 SW COLLEGE
[illegible] WA 99185

LAW #2005361

PORT OF PORTLAND

September 19, 2003

Mr. Gene Loffler
Operations Manager
CLD Pacific Grain LLC
222 SW Columbia Street, Suite 1133
Portland, OR 97201

RE: Environmental Site Assessment of Terminal 4 Leasehold

Dear Mr. Loffler:

This letter is in response to your correspondence regarding the proposed scope for the required Environmental Site Assessment (ESA) for the CLD Pacific Grain/ Cargill property located at the Port of Portland – Terminal 4 in Portland, Oregon.

To ensure that the interests of all parties are efficiently served, the Port requests the following items to be added to the scope of the ESA, as described by ATC Associates, Inc. in their proposal of June 6, 2003:

- Sampling, analysis and reporting of results for any areas showing physical evidence of prior releases or spills of any petroleum products.

- Any correspondence, data, maps, or other documentation relevant to the following items of concern:
  - Location, uses, and removal of AST's and UST's within the leasehold.
  - Historical spills, releases, and cleanups, in particular those associated with aboveground and underground storage tanks storing diesel, waste oil, or other fuels.
  - Historical fueling activities in the vicinity of Buildings 152 and 160.
  - Waste oil and other fuels.
  - Residual contamination after the closure of these facilities.
  - Releases associated with upland stormwater systems discharging to the river.
  - Use of the facility during takeover and relinquishing of the facility during the period from 1943 through 1946, including any site maps from the period.
  - Use, storage, disposal, and other management of any hazardous substances from original occupancy through the present.

As you are aware from previous correspondence, the Cargill leasehold is included within or immediately adjacent to the Portland Harbor Superfund Site listed by the United States Environmental Protection Agency (US EPA) on the National Priorities List in December 2002. The Cargill leasehold is being targeted by Oregon Department of Environmental Quality ("DEQ") as a high priority area for further environmental investigation and potential cleanup.

Given DEQ's continued high interest on the area of Terminal 4, including the Cargill leasehold, the Port believes that the more completely the requested information is supplied through the audit, the less likely that further investigations or remedial action will be required within the Cargill leasehold.

The Port asks that you confirm that the above items will be added to the scope of the audit, and that you notify the Port on when the audit will take place.

Please contact me if you have any questions.

Sincerely,

Eric Schwamberger
Environment & Safety Manager
Marine Facilities

cc: Bob Moulton
David Ashton
Juli Kilgore
Anne Summers

LAW #2005907

Scott, Jacki /mtkl

From: Klein, Dennis /mtka
Sent: Wednesday, December 17, 2003 1:54 PM
To: Quayle, Mark T. /mtkl; Thorstad, Kimberly K. /mtkl
Subject: FW: Cargill: ESA for Terminal 4 leasehold

-----Original Message-----
From: schwae@portptld.com [mailto:schwae@portptld.com]
Sent: Friday, October 10, 2003 3:23 PM
To: Klein, Dennis /mtka
Cc: gene_loffler@cldpacific.com; mergy38@atc-enviro.com; moultr@portptld.com; killgj@portptld.com
Subject: Cargill: ESA for Terminal 4 leasehold

Dear Dennis,

This is to acknowledge receipt of your letter of October 1, regarding the Environmental Site Assessment of Cargill's Terminal 4 leasehold. The Port does not believe that Cargill's response meets the Port's request for inclusion into the ESA scope of sampling, analysis and reporting of results for any areas showing physical evidence of prior releases or spills of any petroleum products.

The Port continues to believe that the more complete the information supplied by the audit, the less likely that further investigations or remedial action will be required within the Cargill leasehold.

The Port will make a final decision on this outstanding issue by October 27, 2003 following agreement on a closeout schedule and offer with Cargill. Until then, the Port welcomes further conversation on this issue.

Appreciatively.
Eric C. Schwamberger

Manager Environment and Safety
Marine Operations, Port of Portland
Box 3529 Portland, OR 97208

Telephone: 503-240-2014
Fax: 503-240-2009
email: schwae@portptld.com

-----Original Message-----
From: Dennis_Klein@cargill.com [mailto:Dennis_Klein@cargill.com]
Sent: Thursday, October 02, 2003 9:49 AM
To: Schwamberger, Eric
Cc: gene_loffler@cldpacific.com; Dennis_Klein@cargill.com; mergy38@atc-enviro.com
Subject: Portland

Mr. Schwanberger:

Attached is our response to your September 19, 2003 letter to Mr.

Loffler. A hard copy is being mailed to you.

Thank you.

LAW #2005918

Oregon
Theodore Kulongoski, Governor

Department of Environmental Quality
Northwest Region Portland Office
2020 SW 4th Avenue, Suite 400
Portland, OR 97201-4987
(503) 229-5263
FAX (503) 229-6945
TTY (503) 229-5471

November 13, 2003

Ms. Anne Summers
Port of Portland
P.O. Box 3529
Portland, OR 97208

RE: Terminal 4 Slip 1 Voluntary Agreement
ECSI #2365

Dear Anne:

The Department of Environmental Quality (DEQ) completed its review of the Voluntary Agreement to conduct Remedial Investigation, Source Control Measure, and Feasibility Study activities for the Terminal 4 Slip 1 site. The draft version transmitted electronically to you on November 4, 2003 should be executed and returned to DEQ by November 26, 2003. Prompt initiation and completion of this project is a high priority for DEQ.

Please call me at (503) 229-5326 if you have questions.

Sincerely,

Tom Gainer, P.E.
Project Manager
Cleanup & Portland Harbor

cc: Jim Anderson, DEQ CU/PH

LAW #2005957

CLD Pacific Grain, LLC

CLD Pacific Grain, LLC
KOIN Center
222 SW Columbia Street
Suite 1133
Portland, Oregon
97201-6610

Telephone 503 243-1133
Fax 503 243-5079

October 14, 2003

Mr. Sam Ruda
Port of Portland
121 N.W. Everett
Portland, OR 97209

RE: Terminal 4 Leasehold

Dear Mr. Ruda:

I am writing as a follow-up to our recent and ongoing discussions concerning the termination of the Cargill lease at the Terminal 4 site in Portland. Again, we appreciate the Port's willingness and openness to discuss these matters.

For purposes of recapping the current situation, I note that we have had two parallel discussions with the Port: a) a dialogue concerning the terms of the lease, equipment and other repairs; and b) an exchange concerning the scope of the proposed Environmental Site Assessment required to be performed upon the termination of the lease.

With regard to both of these points, Cargill has reviewed the Port's proposals, along with the terms of the lease and the history of the facility. After a review, and for purposes of closure, we are willing to proceed as follows:

1-Cargill will remit to the Port the full amounts requested in your last proposal: $108,552 for Fender/Pile repairs, $172,675 for Roof repairs, $32,000 for September and October rent and $133,000 for a prorated MAG charge. We are also willing to pay the Port an amount equal to Landis' estimate to correct existing identified electrical deficiencies – up to $100,000.

2-Cargill will also accept the Port's proposal for Equipment and Spares credits ($80,516 and $55,000, respectively).

3-With regard to environmental issues, I believe that both parties have acted in good faith to make sure that any environmental issues have been identified and addressed. However, it appears that we have not reached a conclusion as to how to approach the ESA. Dennis Klein, our environmental manager, has agreed with the majority of the suggestions made by the Port's environmental manager, but has noted a clarification that Cargill would like to see with regard to sampling. (For your reference, I have attached copies of Dennis' recent letters.) The Port's environmental manager has not agreed to the scope of this testing. It is Cargill's position that the sampling plan proposed meets the needs of the Port, the Oregon DEQ, and more than fulfills the legal requirements under the lease.

With the hope of bringing our discussions on the Terminal 4 Lease to a conclusion, and in consideration for Cargill's acceptance of items 1 and 2, above, we propose that the ESA continue under the negotiated scope between the parties, including the clarifications made by Mr. Klein on the attached letter.

Please advise if this is an acceptable solution to the Port. If it is not, we will need to revisit any and all open matters, including the ones set forth in this letter.

Thank you and I look forward to hearing from you soon.

Sincerely,

Arnie Schaufler
On behalf of Cargill, Incorporated

Enclosures

Cc: Gene Loffler
Don Vogt (Mpls)
Mark Quayle (Mpls. Law)

LAW #2006022

Professional Services Work Order No. 03-0190
To Agreement Between
MACTEC Engineering and Consulting, Inc. f/k/a Harding ESE, Inc. and Cargill, Inc.
Re: Former T-4 Facility, Portland, OR –Oil Contaminated Surface Soil- Cleanup
October 16, 2003

This Work Order No. 03-0190 dated October 16, 2003 issued pursuant to the Harding ESE, Inc. (now known as MACTEC Engineering and Consulting, Inc. ("MACTEC")) Environmental Services Agreement ("AGREEMENT") dated August 9, 2002, between Cargill, Incorporated, ("CARGILL"), and MACTEC, said AGREEMENT incorporated by reference herein.

MACTEC agrees to furnish labor, materials, equipment and other items required to complete for Cargill the professional services herein described to conduct petroleum contaminated soils removal and disposal at Cargill's former Terminal 4 ("T-4") facility in Portland, OR, referred to herein as the "SITE".

1.0 SCOPE OF SERVICES

Background

As part of decommissioning activities, Cargill encountered hydraulic oil contamination around a storage shed, the C-11 hydraulic room and around various terminal building steel structure footing supports (collectively the "Area of Concern" or AOC). In October, 2002, MACTEC performed, on behalf of Cargill, limited investigations to characterize the type and horizontal and vertical extent of the oily material contamination in the AOC. Additionally, MACTEC provided general assessments of possible cleanup criteria and estimates of the possible volumes of contaminated soil. Subsequently the site owner, Port of Portland, provided their guidance to Cargill as to remediation of the contaminated soil. Cargill subsequently provided a response to the Port (September 30, 2003) as to their plan for the cleanup. The plan submitted to the Port was based upon USEPA Region 9 Preliminary remediation Goals (PRG's) for Industrial Soils and as identified by MACTEC's e-mail of September 16, 2003 to the Port. These criteria serve as the basis for this Work Order and proposal. MACTEC is to remove the contaminated soil from the AOC, arrange for the transportation of the contaminated soils from the AOC to the Cargill approved treatment/disposal facility, perform post-excavation sampling, and prepare a report of cleanup for the AOC. The following provides an outline of the remedial activities:

1.1 Contaminated Soils Removal

MACTEC will perform waste characterization and permitting for disposal of the contaminated soil. MACTEC will mobilize to the site and remove the contaminated soil in the AOC to the prescribed levels identified above, and arrange for the transportation of the soil to the TPS soil burning facility in Tacoma, WA. for treatment and disposal. Excavation will primarily be performed by mechanical excavator (approx 11,000 to 14, 000 lbs) and by hand excavation around sensitive areas (footings, underground utilities). Due to the footings and underground utilities present, safety limitations will limit the extent of cleanup around these areas. It is anticipated that approximately 52 cu yds (70 tons) of material will be removed and sent for disposal. MACTEC will obtain post excavation soil samples from beneath the former contaminated soil AOC for PNA analysis (EPA Method 8310).

Qualifying Notes:

1). We anticipate minimum ability to excavate beneath underground utilities and will not be able to excavate under existing footings due to safety concerns and to maintain the structural integrity of the features. It may not be possible to excavate over 4 feet in the AOC due to these concerns.

2) The proposal assumes all work is complete in one mobilization/demobilization. If it is determined that the post excavation sample results are necessary prior to backfilling; an additional mobilization/demobilization can be performed for an additional $1,500.

3) Proposal does not include backfilling to specific compaction standards (90% or 95% standard or modified proctors).

4) It is understood by MACTEC that the previous containerized soils (roll-off box) have subsequently been removed and are not a part of this work plan.

1.2 Backfilling

Following completion of contaminated soil removal, the excavation will be backfilled with imported, clean ¾" (+/-) crushed rock fill material. The material shall be placed and compacted using the excavator bucket, and graded to match surrounding surface elevations.

1.3 Groundwater Sampling

If during the soils excavation, groundwater is encountered, MACTEC shall sample such groundwater using simplified groundwater sampling techniques such as direct sampling.

1.4 Data Reduction/Report

Following receipt of the analytical results from post excavation sampling, the data shall be tabulated and evaluated. The results shall be compared to the USEPA Region 9 PRG Industrial Standards (commercial/industrial) including the Soil Screening Levels (SSL) DAF 20 criteria. MACTEC shall prepare and submit a draft summary report of the activities and findings.

1.5 Additional Services

Following completion of the basic services described in Sections 1.1 through 1.4 and authorization from CARGILL to proceed, MACTEC may perform additional services requested by CARGILL. Such services may include consultation by meetings, by telephone and/or by mail outside of the proposed scope of work described in Sections 1.1 through 1.4, including any specific agency site closure efforts or extended statistical assessment methods associated with such closure criteria. Placement or sampling of any groundwater monitoring wells will be additional services and will be performed subject to an addendum to this Work Order.

2.0 SCHEDULE

The services described in section 1.1 thru 1.4 will, subject to Cargill's timely execution of this Work Order, will commence during the last week of October or the first week of November, 2003. It is anticipated it will require 2-3 days of field efforts to complete the required excavation and removal of contaminated soils from the site. Post excavation samples will be submitted to the laboratory upon completion of field activities and the data from the samples is anticipated approximately 2-3weeks (10 or so working days) from receipt by the

laboratory... A summary report will be issued within approximately 1 week of receipt of the laboratory results.

3.0 CARGILL SUPPLIED INFORMATION/MATERIALS/ASSISTANCE

For MACTEC to complete the services under this Work Order, MACTEC requires CARGILL to facilitate access to the SITE and provide information as to any known utilities or buried objects in the AOC

4.0 COMPENSATION

CARGILL will pay MACTEC for services rendered on a cost reimbursement basis as described below.

A. Compensation for services of MACTEC will be on a time and expense basis for services rendered by principles and employees assigned to the project. Personnel time shall be assessed at 2.6 times payroll (PRC) cost.

B. For reimbursable expenses and equipment charges, an amount equal to the actual cost of expenses incurred times a factor of 1.10, subcontracted services are assessed at 1.15 times.

C. The estimated cost of consulting services described in this Work Order (Sections 1.1 through 1.2) is as follows (costs assume placement of the fifth sample location):

On-site Observation/Sampling/Report..... $ 5,700.

Soils Removal/Transportation/Disposal (52 tons).....$16,445.

Expenses:

Laboratory (unit costs based on routine turnaround)
Soils and groundwater (unit cost basis):

1 sample disposal characterization (PNAs)..... .....$ 450.
10 samples PNAs @ $225/ each..... $2,250.
5 samples total chromium @ $ 90 each..... $ 450.

Lab Subtotal..... $ 3150.
Misc. expenses (trans, shipping, instrumentation)..... $ 100.

Expense Subtotal.....$3,250.

Total Labor and Expense .....$25,395.

Unit Costs for additional efforts:

Additional excavation.....$145/ton
Additional Transportation.....$788/trip
Additional On-site Observation.....$700/day

Cost of this work order is not to exceed $ 27,935. without prior approval of Cargill.

5.0 ACKNOWLEDGMENTS

A. Estimates furnished by MACTEC relative to the cost of providing professional services under this Work Order are its judgment based upon conditions known at the time the estimate was prepared. The final cost of such work will be dependent on when the work commences, the receipt of timely decision from the CARGILL, the ability of subcontractors to provide information in a proper and timely fashion, and other factors over which MACTEC has no control.

B. In the event that concealed conditions are encountered by MACTEC which differ materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in this Work Order, the compensation shall be equitably adjusted.

6.0 GOVERNING DOCUMENT

A. This Work Order is incorporated into and made a part of the Agreement between MACTEC and CARGILL dated August 9, 2002 (AGREEMENT) and is subject to all the terms and conditions of that Agreement. In the event of any inconsistency or conflict between this Work Order and the Agreement, the terms of the Agreement shall govern.

AUTHORIZED BY CARGILL:

By: Donald D. Klein Date: Oct. 21, 2003

Title: Environmental Manager

ACCEPTED BY MACTEC ENGINEERING AND CONSULTING, INC.:

By: [signature] Date: Oct. 22, 2003

Title: Vice Pres.